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British Society for the History of Pharmacy
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British Society for the History of Pharmacy

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The British Society for the History of Pharmacy was formed in 1967 under the aegis of the Pharmaceutical Society of Great Britain, having originated from its History of Pharmacy Committee.

BSHP seeks to act as a focus for the development of all areas of the history of Pharmacy, from the works of the ancient apothecary to today's ever changing role of the community, hospital, wholesale or industrial pharmacist.

Aims

Promotion of historical studies related to pharmacy.
Advancement of knowledge and propagation of understanding of the history of pharmacy.
Publication of the research work of pharmaceutical historians.
Preservation of pharmaceutical artefacts and historic pharmacies.
Support for the work of relevant museums and offering advice on establishment of other pharmaceutical exhibits and on the preservation of pharmacies.
Co-operation with related professions and local historians on medico-pharmaceutical topics of mutual interest.

Pharmaceutical Historian

The *Pharmaceutical Historian* has been published since 1967, at first intermittently, but on a regular quarterly basis from 1972.

An index for the years 1967-1995 was published in 1998. An index for 1996-2000 was published with the December 2000 issue. Issues generally comprise 16 pages and cover.

Papers, short communications and letters in English on any aspect of the history of pharmacy are welcome and should be sent to the address above or by email to *bshpeditor@associationhq.org.uk*

Any illustrations are converted to monochrome for printing. Further details of requirements can be found on the website *www.bshp.org* under Publications.

Membership

Membership costs £20.00 per annum and includes:

Four issues of the *Pharmaceutical Historian*.

Regular meetings, with guest speakers, usually in November, February and May. (Many meetings are College of Pharmacy Practice accredited for post-graduate education requirement.)

Visits to places of historic interest, museums, collections, botanical gardens, etc.

Annual Conference, usually in March/April (but not 2005 because of International Congress).

Free use of Royal Pharmaceutical Society of Great Britain's library facilities for research.

Help in historical research and with the identification of artefacts.

Affiliation to the International Society for the History of Pharmacy (ISHP).

Affiliation to the British Society for the History of Medicine (BSHM).

Application forms are available from the Honorary Secretary at the address above or on *www.bshp.org*

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PHARMACEUTICAL HISTORIAN

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Diary

Wednesday 13 April 2005
Annual General Meeting at RPSGB Lambeth
Please note time: **5 pm, followed by**
Foundation Lecture
'Patients Drugs and Doctors, 1930–1950' by Dr Robert Bud of the Science Museum, 6.30 pm

Wednesday 28 September 2005
'From chemicals to pharmaceuticals to biotech: The transformation of ICI in the twentieth century' by Dr Viviane Quirke of Oxford Brookes University, 6.30 pm

Wednesday 16 November 2005
'An Occasion at Once Historical and Novel': The Foundation of the National Association of Women Pharmacists, by Dr Sue Symonds of Nottingham University, and a member of the NAWP Executive. This is a joint meeting between BSHP, RPSGB and NAWP. Lambeth 6.30 pm

18, 19, 20 May 2005
Physick lies a-Bleeding or The Apothecary Turned Doctor. World Premiere of the 1697 satirical comedy by Thomas Brown, at Apothecaries Hall, Blackfriars Lane, London EC4V 6EJ. Tickets £75 to include 3-course dinner with wine and entertainment by Instant Sunshine. Book online at www.apothecaries.org or by credit card on 08700 600 100.

1-4 September 2005
BSHM 21st Congress at Exeter. Details from Secretary.

37th International Congress of the International Society for the History of Pharmacy

22–25 June 2005 Edinburgh

The Congress will be organised by the British Society for the History of Pharmacy. All members of BSHP are members of the ISHP. The BSHP will not be holding its usual Spring Conference in 2005. Brochure, abstract and registration forms are available online at www.bshp.org

Note: Early Registration *for BSHP members* is now extended to 31st March.
Late Registration 31st January – 20th June
Abstract submission deadline 31st March

Revised Booking Information

The organisers of the 37th International Congress for the History of Pharmacy have been made aware that some overseas delegates have experienced problems in making bank transfers for the Conference using the transfer information on the Registration Form. We have now been advised that the following information should work for all banks in all countries:
Bank transfer in UK payable to:
Account number 4222 1286, Sort Code: 16 57 10, IBAN GB91RBOS16106510008734, BIC (i.e. Swift code) RBOSGB2L
Cater Allen Private Bank, 9 Nelson Street, Bradford, BD1 5AN, UK

Note: Transfers from *outside UK* will require the following information:
ALL TRANSFERS SHOULD BE MADE IN £GBP STERLING. Ask your bank to make a SWIFT payment to: Royal Bank of Scotland, London **Swift:** RBOSGB2L, **Credit:** Cater Allen Ltd A/c 20231833 **Sort code:** 160400 **Reference:** BSHP Conference 2005, A/c 42221286, YOUR NAME

Please contact the Conference Secretariat if you have any queries: Tel + 44 (0) 1794 511331/2

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Victorian Country Pharmacy: Some Gleanings from a Prescription Book

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Introduction

The nineteenth century saw some of the most important advances in medicine and public health since late Roman times and many are reflected in the prescription book records of this period. Prescription books are an important, but under-used, source of information on contemporary pharmaceutical practice and some surveys on nineteenth century and other prescription books have appeared. Rowson described an early book from the west country,[1] and recently Anderson[2] has analysed and compared a number of books. This paper attempts some analysis of a prescription book now in the possession of Alan Screen BPharm MRPharmS, the current owner of the Bishop's Castle Pharmacy situated in the Shropshire–Wales borderland. The period covered by the book embraces the last edition of the P*harmacopoeia Londiniensis* in 1851 through the *British Pharmacopoeias* of 1867 to 1895 and it reflects some of the changes in prescribing and dispensing practice over that period.

This book also traces the dispensing fortunes of a typical country pharmacy from mid- to late Victorian times, 1855 to 1904 and was most probably started by Mrs Martha Bills. She was a widowed chemist and druggist living in Market Square according to the 1861 Census,[3] and was succeeded by David Powell Edwards in 1890 who ran the business until 1907 when it was taken over by John Everall Gwillam. Several other chemists and druggists' businesses can be identified in Bishop's Castle over the period covered by this book. Most had their place of business in Market Square (also called Market Cross or Butter Cross in some trade directories[4]).

Description of prescription book

The book is a substantial volume that has stood the passage of time very well. It measures 8x13x1° inches (20.3x33x3.8 cm) and is hard bound in leather but blue papered on both front and back boards. The spine bears the letter P in a square label. The endpapers are marbled. The book is indexed at the front (2 letters to each leaf). The pages are ruled feint and divided into two columns by a red vertical rule and the first page is inscribed 'Praescriptio Anno Domini 1855' (see Fig. 1).

The pages are hand-numbered consecutively from 1 to 518 with the last two pages being plain and vertically ruled by hand in ink. The last prescription entries on p.509 are dated 1904. Several lists of prescriptions and recipes appear in the last pages. Page 510 is headed 'Agricultural Recipes' and contains but a single entry for 'drenches for preventing strike in yearling cattle'. Page 511/2 is headed 'Dr Bremner's Prescript.' and lists several prescriptions dating from 2 Feb 1898 to 19 Nov 1903. Similarly, pp.513/4 are headed 'Dr Bremner's Prescript.' dating from July 28 1898 to Feb 2 1898 and obviously precede those on p. 511. Page 515 is titled 'Dr Sutton's Prescriptions' and these are variously dated 1898 to 1900. Pages 517/8 and the two end pages contain a number of veterinary prescriptions, numbered (not in sequence) between 712 and 726 written by a number of prescribers: LCM, CE Daynes, A B, W Charnley, A Blake, A Blake V.S. Between the rear endpapers is a blue sheet entitled 'Dr Sutton's Prescript[ions]' which must date from around 1906 judging by the entries.

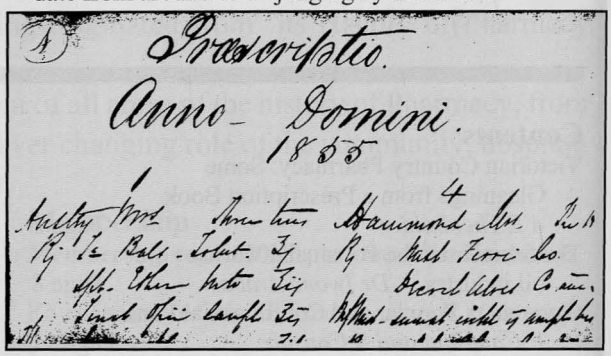

Fig. 1. Prescription book title page

Prescriptions are written in conventional abbreviated Latin and are numbered with several preparations sometimes placed under one prescription number. Prescribers are rarely indicated and when they are, often by initials only; almost half the scripts are endorsed 'A Copy'. Dates of dispensing are not recorded, only the date written on the prescription by the prescriber. Entries are written in the same hand until about page 74 (no. 470, 1860) when a more definite pen stroke is applied. A few coded prices appear in the left margin of these early scripts. Examples include =/i ,=/b, =/e, J/-, J/I, J/h, J/t, o/I (see Fig. 2) which are too few in number to establish the pricing code in use.

A new hand appears intermittently from page 206 (1877) – a more careful and laboured handwriting, perhaps that of an apprentice or assistant? A third, upright hand appears around page 228 (1879) along with the first hand. The script numbering sequence is constant up to no. 1793 on page 304, when a fourth hand and a new numbering sequence are introduced. This occurred sometime between April and August 1889 as no prescriptions are recorded in this period and the business may have passed into the hands of D Powell Edwards during this time. The new sequence begins with the ringed entry 2937 and is interspersed with abbreviated date entries (22790 = 22 July 1890?); both systems seem to be used indiscriminately for several pages until the ringed abbreviated date appears alone (p. 313). A conventional dating appears briefly on p.327 (29 Apr 1893) after which the numbering continues with a complex code (e.g. 2612.3 C) for a few pages only to be replaced by a conventional numbering starting at 2686 on p.342 (Sept 19 1895) and continuing to 29.9 on p.376 (10 June 1897). The numbering becomes erratic at this point, jumping by 1000 to 3960 on p.377 and on reaching 4098 on p.395 jumps by another 1000 to 5100 on p.396 (Feb 6 1899), continuing to 5285

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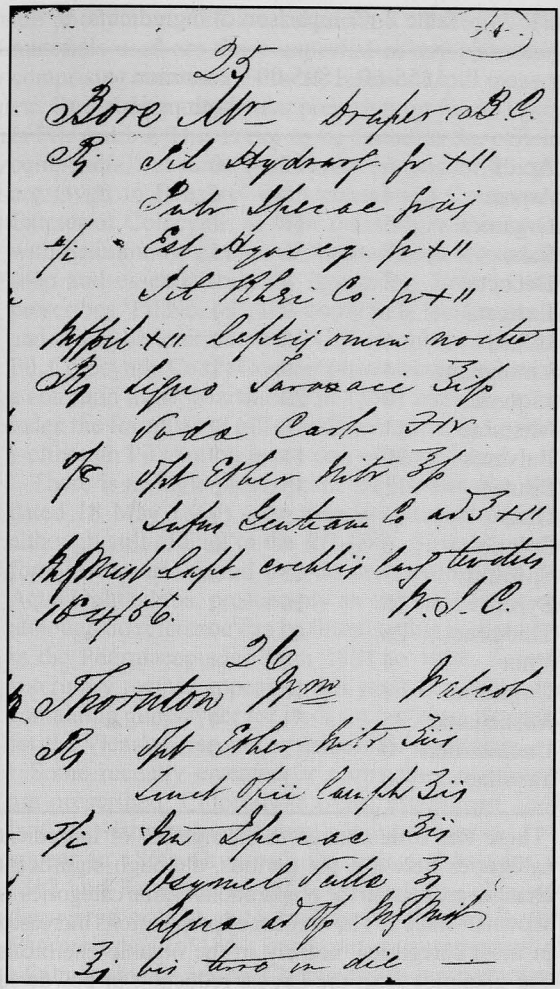

Fig. 2. Example of early scripts and coding

on p.432, then jumping to 5386 at the next entry on p. 433. The prescription numbering goes awry on p.450 where the numbering changes from 5534 to 5335, 5336, ... for several pages, the second digit being corrected in red ink from 3 to 5. The various numbering changes may be a commercial ploy to indicate an apparently busy dispensing business or, more simply, a fancy of the new proprietor.

Several loose papers were found between leaves of the book: one is a buff sheet stamped 'DP Edwards, Chemist and Stationer, Bishop's Castle' with a prescription copied in indelible pencil. Of equal interest is a printed blotter sheet advertising Whelpton's Pills (see Fig. 3). These pills were described in Martindale[5] as a preparation of rhubarb, aloes, ginger, ipecac and soap, the formula originally disclosed in *The Lancet* in 1903 as part of their campaign against patent medicines. These are not described in Beasley's *The Druggists General Receipt Book* of 1854[6] and 1878[7] and were probably introduced between 1878 and 1903 towards the end of the life of this prescription book.

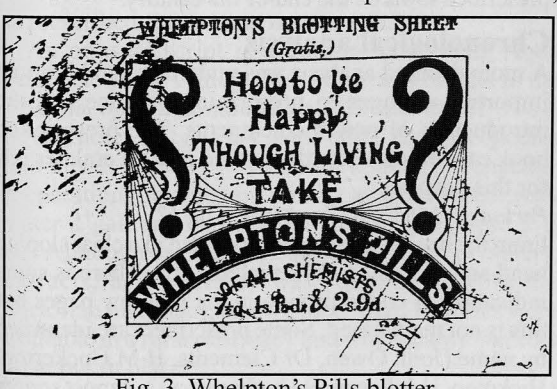

Fig. 3. Whelpton's Pills blotter

Analysis of Book

An analysis of the prescriptions was undertaken to establish the types of preparation made and the quantity of prescription work done in this pharmacy. Prescriptions were classified according to the scheme adopted by Rowson into: Oral liquids (including mixtures, draughts, confections and drops); Pills; Powders; Lotions, Liniments and Embrocations; Ointments; Sundries (including plasters, etc.) The division of work into years was made from the change of year dates on the prescriptions; although not always accurate this gives a reasonable approximation to the workload of the Pharmacy. The full analysis is summarised in Table 1.

Workloads

The analysis shows clearly that the volume of work was highly variable. From small beginnings the prescription work increased to a peak in 1859, then declined gradually to a low point in 1872, remaining steady until 1876 when a second peak is apparent in 1880. Once more the numbers fall to a low point in 1889 with some recovery in 1890-91, then another low in 1892 followed by a final increase in work until 1903. It is interesting to speculate whether these peaks and troughs are associated with competition by other chemists and druggists trading in Market Square, or symptomatic of a general decline in medical prescribing in those periods, either generally or through lack of practitioners in the town. Certainly, the change in fortune after 1892 is associated with the transfer of the business to David Powell Edwards around 1890. He is registered in 1891 as a chemist & druggist, Certificate No. 8282 17 July 1890, residing in the High Street, Bishops Castle.

Preparations

Considering the type of formulation , the majority of prescriptions called for oral preparations. These were mainly mixtures with few other oral preparations recorded; in the typical busy year of 1859 there were but 2 draughts, 4 drops, 4 gargles and one tincture among the 111 oral preparations dispensed. Pills were next in importance but their popularity declined towards the end of the century. Powders also decline in frequency but were never a large proportion of the recorded work. Interestingly, there are no prescriptions for suppositories, pessaries or bougies. These preparations became official in the *BP 1864*.

It must be remembered that the overall number of prescriptions was very small compared with a busy city or county town pharmacy and give little indication of

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Table 1. Prescription Analysis

Year	Orals	Pills	Pulv.	Lotio	Ung.	Sundry	Total
1855	10	4	2	2	1	1	20
1856	55	27	3	3	1	0	89
1857	25	12	0	4	4	0	45
1858	57	32	10	7	4	2	112
1859	111	73	37	8	4	0	233
1860	106	68	20	5	7	5	211
1861	74	40	10	4	1	2	131
1862	38	25	4	3	0	1	71
1863	76	35	7	9	1	2	130
1864	38	18	4	1	2	2	65
1865	23	12	3	6	1	1	46
1866	31	15	6	4	0	1	57
1867	47	21	0	7	2	2	79
1868	35	17	6	4	0	1	63
1869	30	13	2	4	1	2	52
1870	27	14	2	1	0	0	44
1871	26	9	2	2	3	0	42
1872	7	10	2	3	0	2	24
1873	16	8	2	6	0	0	32
1874	25	10	1	3	2	1	42
1875	20	7	2	2	1	2	34
1876	23	6	0	2	1	0	32
1877	25	8	0	2	1	0	36
1878	40	15	3	5	2	2	67
1879	60	32	4	9	6	3	114
1880	88	42	25	5	7	2	169
1881	71	30	13	3	4	4	125
1882	63	20	5	6	3	2	99
1883	43	14	6	4	2	2	71
1884	36	21	6	4	3	0	70
1885	13	2	3	2	0	0	20
1886	20	5	1	2	1	1	30
1887	13	1	0	7	1	0	22
1888	13	1	0	7	1	0	22
1889	10	2	0	0	0	1	13
1890	58	7	1	8	2	4	80
1891	55	5	0	6	3	1	70
1892	7	4	2	1	1	0	15
1893	29	2	1	4	1	1	38
1894	41	10	4	4	1	4	64
1895	76	9	2	9	8	2	106
1896	96	18	1	10	5	3	133
1897	98	12	4	8	2	4	128
1898	67	2	1	5	1	0	76
1899	90	11	5	13	4	2	125
1900	113	17	4	9	9	3	155
1901	112	14	4	10	6	6	152
1902	125	16	2	8	4	5	160
1903	160	18	5	16	9	6	214
1904	92	7	1	7	3	2	112

the real volume of dispensing work. Many customers would purchase chemist's nostrums or specify the medicines they wished to purchase – either through own knowledge and experience or through hearsay.

Drugs and galenicals

The book shows a wide spread of drugs and galenicals in use, from Acids to Unguenta. An analysis of the materials used was made for the two periods 1855–1860 and 1895–1900 in order to highlight changes in practice. Some 20 categories of material were identified as shown in Table 2.

Table 2. Comparison of ingredients

	1855-60	1895-00	Common to both periods
Acids	6	11	0
Aquae	4	8	4
Organics	5	19	1
Salts	47	36	15
Decocta	3	4	0
Extracta	11	7	1
Infusa	6	10	1
Linimenta	4	9	1
Liquores	10	29	
Misturae	11	8	2
Pulveres	30	11	7
Pilulae	11	19	5
Olea	16	9	1
Solutio	3	4	0
Spirituii	7	15	3
Syrupi	10	16	3
Tincturae	26	42	9
Vina	4	4	4
Unguenta	4	16	0
Miscellania	25	31	4
Unclassified	0	2	0
Tabellae	0	1	0

There was little change in the number of ingredient categories between the periods, although significant changes are seen in the preparations within categories as shown in Table 2. The number of preparations increased in most categories, notably in the organic chemicals and alkaloids with the largest reduction in powdered drugs. Interestingly, very few materials were common to both periods. This may be due to a combination of reformulating and re-naming galenicals in the Pharmacopoeias and also to changes in prescribing practice. Of the new preparations, essences and concentrated extracts and tinctures are most evident, reflecting the work done on galenicals stability by early pharmacists. Chloroform water became the most popular vehicle for mixtures in the late period which also saw a reduction in the number of inorganic salts prescribed. More synthetic organic chemicals and alkaloids are prescribed towards the end of the century.

Chronological analysis

A more detailed analysis was undertaken to highlight important changes in prescribing practice and the introduction of new medicaments. The prescription book can be conveniently divided into several periods for this purpose.

Period 1: 1855–1877, scripts 1–1217

From the beginning scripts are copied in a clear sloping hand and written in abbreviated Latin. There is some indication of coded pricing in the first few pages but this is not maintained. Some prescribers are identified by name (John Owen, Dr Clements, H M Cockerton, Hickman, H Johnson, B Hughes Esq.) but most scripts

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are anonymous and are subscribed 'A Copy'. The materials used are those expected in any pharmacy, comprising tinctures, extracts, infusions, pill masses, etc. One of the most popular prescriptions from J Owen is Pil. Antibil. This is not to be found in the official compendia, but some 14 different recipes for this pill are given in Beasley[8] each containing Compound Extract of Colocynth as their main ingredient along with Scammony, Extract of Rhubarb and sometimes soap and essential oils for flavouring. Later, Owen prescribes 'Pil.No. 66'; this could be a local nostrum and might be interpreted as 'CC' an abbreviation for Pil. Colocynth. Co.(?) Counter prescribing of pills was a common trade; Martindale in 1885[9] includes in his index the formulae of pills 'had by request' in London – although Pil. Antibil is not one of those listed.

There is a single prescription for leeches (no. 434 dated 18 May 1860) – by then an unusual remedy although still official in the *BP 1864*. Several scripts for plasters are found and an interesting call for Aqua Ophthalmia, presumably an ophthalmic lotion, although no reference can be found to this preparation in the Pharmacopoeias from 1851 to 1898. Several veterinary recipes appear in this period, notably one containing gunpowder for 'foot rot'; a 'black draught' for the Vicar's horse and a 'drench for a yearling'.

Some recently invented or proprietary medicines are prescribed: Chlorodyne (416, introduced 1846 by Collis-Browne) and Brand's Liquor Potassa (474) appear in 1860, Gregory's mixture and powder in 1862 and Paregoric in 1867. Chloroform, although discovered in 1831 and introduced in the first *British Pharmacopoeia* of 1864, is seen only as an ingredient of a liniment in this period. Chemical substances include Ammon. Sesquicarb., Pot. Antim. Tart., Pot. Iodid. and Iodine, with Zinci Sulph as an ingredient of an eye lotion. The mercurial salt Hyd. Chlorid. (referring to the *Pharm. Lond.* 1851 preparation of mercurous chloride) occurs frequently in all preparations. Chloral Hydrate, a hypnotic introduced into medicine in 1868, is dispensed from a copy prescription dated 1875. A single 'Injectio' containing Zinc Chloride is prescribed in 1865 (no. 829) and must refer to an irrigation solution rather than a hypodermic injection as these were not introduced until the *BP 1885*. The powerful analgesic morphine acetate, official in the PL 1851, is prescribed for the first time in (782).

An unusual script is a mixture containing Aqua Pimentae as the vehicle. This water was official in the *Pharmacopoeia Londiniensis 1851* and the *BP 1864*. Squire notes that it is not in the other Pharmacopoeias and it is described by Whitla as 'a brownish unstable preparation, obtained by mixing allspice 14 oz. with water 2 gall and distilling off one gallon. Dose 1–2 oz.' Although extemporaneous preparation of waters, extracts, and mixtures was commonplace in the Victorian pharmacy, one wonders what facilities were available in a rural pharmacy and what quality controls were put in place!

Directions to the patient were written in abbreviated Latin and are typical of the period. Some specific directions appear; for Ung. Hyd. Biniodid. the patient is directed to take an amount ' the size of a pea and rub into the swollen part every night' – an example of controlled transdermal delivery? A second direction is curious: in a prescription for Syr. Ferri Iodid. the patient is cautioned that 'a silver spoon should not be used'. This obviously indicates a chemical incompatibility between the medicine and the predicted instrument of administration, but also indicates the lifestyle and habits of the patient, who presumably had then to purchase an ordinary spoon for his medicine.

Period 2: 1877–1879 scripts 1218–1329

This second short period has several interspersed handwritings. The original hand is now quite untidy on occasions and there are some crossings out. Some new medicines introduced in this period include Troch. Potass. Chlorat., Liq. Fowlers, Pil No. 76 (possibly a reformulated version of our old friend No. 66), Zinci Phosphid. Pil., Ung. Vaseline and Pulv. Gregory Co. – *Prussian Pharmacopoeia*. The reference to this pharmacopoeia may be significant as there were many different formulae for Gregory's Powder (all contained powdered Rhubarb root, powdered Ginger, light or heavy Magnesia and were used for dyspepsia).

Period 3: 1879–1889 scripts 1330–1793

This decade consists of entries in several hands. It sees the introduction of commercially produced medicines such as Pil. Pepsine Co. (Kirby), Maltine (a commercial malt extract; Martindale and Westcott 14th edn[5] give 'Maltine' – a trade mark), Pil. Phosphor. Co. (Kirby), Liq. Euonymus et Pepsin. Co. (Oppenheimer's). New official medicines include Syr. Triplicans (Easton's Syrup), Ung. Picis Carb., Liq. Potass. Citrat. and Codeine in 1885, then just introduced into the BP 1885.

An interesting annotation to prescription 1445 for Mr Carsley states 'June 2nd 1881 he started for America'. The last entry for this period was made for script 1793 dated March 27th 1889.

Period 4: 1889–1899 scripts 2937–4098

This period begins with a script written in a new hand dated August 26 1889. The number sequence is changed and commences at 2937. Some prescriptions are priced in code, apparently the same one as used at the beginning of the book. The previous hand returns on p. 307 with a script dated 22 July 1890 and a new, unusual, numbering sequence begins, being an abbreviated date of 22790. The old sequence returns but is gradually replaced by the date system although there are a few old style numberings interspersed. The date numbering is extended with points between the (day.month.year) and eventually evolves into an elaborated code such as 31.5.92C. The conventional sequence reappears around September 1895 after a script numbered 26.8.5 with 2686. This new sequence continues until 2959 on p. 376 (10 June 1897] when the sequence jumps to 3960 on p. 377 reaching 4000 on p. 382 then 4098 on p. 395.

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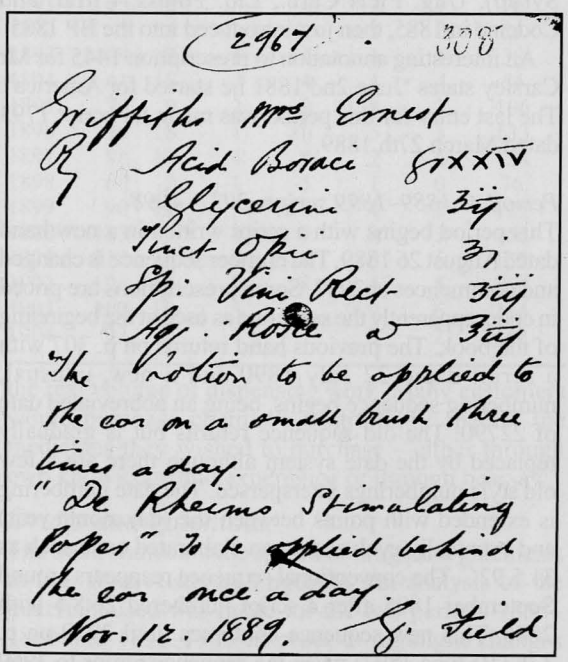
Blaud's Pills (Pil. Ferr. Carb., official in *BP 1864*) now appears as a common replacement for mixtures containing iron citrate. A single script for Jujubes containing cocaine gr 1/20 (2942) appears in 1897. This period also sees the introduction of commercial preparations and several synthetic drugs; Liq. Carbonis Deterg. (Wrights) (2944), Antipyrin (27291), Ammon. Brom. (24991, official in *BP1885*), effervescent granules of Caffeine Citrate (3011.2), and Nitroglycerine solution are all recorded. A new pharmaceutical formulation appears as Tabellae Nitroglycerini, the first call for this, now universal, dosage form in the pharmacy. However, these tablets were formulated with a chocolate basis and were intended to be masticated before swallowing – a formulation and direction that persisted until 1968 when a new mannitol-based sublingual formulation was introduced. Commercial sources are specified: D&F (Duncan & Flockhart) for Blaud's Pill, B&W (Burroughs & Wellcome) for Anticonstipation Tabloids and Salol Tabloids, Angiers Petrol. Emuls. – a timely substitute for the drastic hydragogues beloved of earlier prescribers. Also seen is Chlorabron (Burgoyne's) – a proprietary hypnotic mixture containing chloralamide (a form of chloral hydrate) and potassium bromide flavoured with liquorice, recommended for insomnia and sea-sickness.

There is a curious entry for 'De Rheims Stimulating paper' – to be applied behind the ear once a day (No. 2967, 12 Nov 1899, see Fig. 4). This cannot be traced in Martindale or Beasley and is probably a cantharidin preparation similar to the Charta Epispastica of the BP 1867 and 1885 which was used to treat alopecia and stimulate hair growth. A rare prescription for Confection of Sulphur appears (161090, 16 Oct 1890?) for the Rev. WH Rowland with archaic instructions 'Put in a gallipot and tie over with parchment. Sig. The Confection. Take a teaspoonful three times a day'.


2967 . 308

Griffiths Mrs Ernest

℞ Acid Boraci gr xxiv
Glycerini ℥ij
Tinct Opii ℥j
Sp. Vini Rect ℥iij
Aq. Rosæ ad ℥iij

The lotion to be applied to the ear on a small brush three times a day.

"De Rheims Stimulating Paper" to be applied behind the ear once a day.

Nov. 12. 1889. G. Field

Fig. 4. De Rheims Stimulating Paper

Period 5: 1899–1904 scripts 5100–5992

An upright hand appears in this period from 4004 to 4024 when the previous hand joins it. Several new medicines and formulations appear in this period: Ophthalmic Disks (Richardson's) (5100, 3 Jan 1899 – the only script for lamellae in the book) and Iodoform (5131, 5 Aug 1899 – invented 1832 but not used medically until 1878), Wyeth's Granulated Pepsin (5247, 18 Jun 1900, an ingredient in a mixture) and Urotropin (5815, 19 Aug 1903 as gr vii powders with the direction 'one or two to be taken at bedtime twice a week for a month or so'). Cachets appear for the first time in 1903 containing Papain gr. v (5747, 4 Dec 1903), Drional gr x (5749, 6 Oct 1903) and Antipyrine (5766, 30 May 1903). Several scripts for BW's Tabloids appear and in 1902 the first entry for a hormone replacement therapy – Tabellae Thyroid Co. (BW&Co.).

One notable prescription in this period was for Lord Clive at Walcot (5248, 2 Jan 1901). It calls for a powder and a mixture, the powder containing gr i each of Pulv. Ipec. Co., Calomel, Pulv. Antim Co. and to be taken at once. The mixture was less drastic, with Vin. Ipecac, Liq. Ammon. Acet., flavoured with Syr. Aurantii and Aq. Anisi. The script was written by a local practitioner, SH Puckle, a well-known person in Bishops Castle as physician and later Mayor.

The People

The prescription book gives little information about the people of the time.

Pharmacists

No names of pharmacists, chemists or druggists are recorded in the book, and there is no indication of ownership. However, examination of the Census Enumerators' Books and other records of the time strongly suggest Martha Cann Bills started the book in 1855, although her presence is first recorded later in the 1861 census. Her assistant druggist, John Owen could well have written some of the scripts in the first and second periods. The next most likely person is David Powell Edwards and his is probably the strong hand appearing in period 3 and continuing to the end of the book. The evidence here is the registration date and address for Edwards, the presence of the stamped copy script found in the book, and finally a copy of Beasley's Druggists Receipt Book in the possession of Alan Screen with the names of MC Bills and D Powell Edwards ink-stamped on the title page.

Prescribers

As stated above, many scripts are unsigned or are copies and those clearly signed by the prescriber are often initialled. The names of known prescribers are listed in Table 3. Further work is needed to relate these persons to the town.

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Table 3. Prescribers

Edwyn Andrews	I R Humphreys
I Andrews	H I
A B	H S I
G B	A Jackson
Richard Barnell	H Johnson
E Bird	R Middlemore
A B Brookes	Dr Montford
J Buchan	David Morgan
W L C	Rowland Newton
W Charnley	H O'Neill
W Chernley	John Owen
Mr Clements	I [J?] O
H M Cockerton	L Parker
I Cockerton	S H Puckle
W L Cox	Andrew N Riddell
G Field	Thos. Sampson
A B G	C F Sixsmith
A H George	A N Smith
C T Griffiths	CW Suckling MD
G A H	Taylor
A H H	H O Thomas
Hickman	Dr Thursfield
Robt Hockerton MD	A Walmer
I S Houghton	I H Whitchurch
Dr Howard	J Clay Wilkes
B Hughes, Esq.	G Wood
I K Humphrey	Dr Woodward

The Patients

There is some information about the people who had their prescriptions dispensed in this Pharmacy. Mostly they are townspeople, often denoted by their street or place of residence (Welsh St., Salop St., next door) or their trade (draper, ironmonger, saddler, shoemaker, etc., see Table 4).

Table 4. Trades

butcher	glazier	c/o Norton &Son
grocer	ironmongers	police
engine driver	maltster	railway guard
fishmonger	mason	junr. shoemaker
flour dealer		

But a large number of patients lived at a distance from the town and Table 5 shows the identifiable localities noted in the prescription book. They mostly reside within a 5-mile radius of Bishop's Castle, but some come from far afield – patients from London, Liverpool, Manchester, Cheltenham are recorded. Some unusual addresses do occur such as 'Wombwell's Menagerie' and 'Man with S.C.C. Steamroller' in 1903. Some interesting trades are given, 'Mr Harris, Railway Guard', a reference to the curious and long defunct Bishop's Castle Railway, and one to 'Cad, Mr Jno. (Prize Fighter)', possibly a travelling man.

Table 5. Patient Locations

Shortest distances from Bishop's Castle to place of residence, arranged in increasing distances up to 12.5 km

Place	*km*	*Place*	*km*
Cabin	1	Norbury	5.5
Lower Oakley	1.38	Pentre Wales	5.5
Oakley	1.5	New House	5.63
Banks Head	1.88	Plowden	5.75
Coalbatch	2	Birches Mill	5.88
Lydham	2.5	Shadwell	6
Woodbatch	2.63	Llanhederick	6.25
Leasty	2.75	Hopesay	6.5
Brockton	3.13	Myndtown	6.75
Snead Mill	3.25	Walk Mill	6.75
Moat Hall	3.38	Edgeton	7
More Rectory	3.38	Kempton	7
Goat House	3.5	Old Chirchstoke	7
Lydbury North	4	Court House	7.13
Totterton Hall	4	Hergan	7.13
Acton	4.25	Mellington Hall	7.13
Linley	4.5	Wentnor	7.13
Reilth	4.63	Corndon	7.25
Cefninion	4.75	Dolvaur	7.5
Edenhope	4.75	Asterton	7.75
Walcott	4.75	Buffalo Inn, Clun	8.5
Mainstone	5	C[lun?]	8.5
Cwm Cay	5.13	Bluebell	8.63
Eaton	5.13	Horderley	8.75
Eaton Station	5.13	Pentrenant	8.75
Hyssington	5.38	Priest Weston	8.88
Issington	5.38	Chirbury	11
Dog & Duck	5.5	Montgomery	12.5

Conclusions

The prescription book can never give a true reflection of the workload of any pharmacy. Victorian Chemists and Druggists were foremost tradesmen and most of their business would be concerned with counter prescribing and sales of chemists' nostrums as well as known and trusted medicines. The analysis of this prescription book from a small country town gives a picture of the practice of pharmacy at this time and place. It shows that newly invented drugs were prescribed and dispensed and chronicles their introduction to the rural scene. It provides a very narrow view of rural pharmacy; there is no surviving information on the counter trade of this pharmacy, no order book nor wholesalers' invoices or receipts. Much veterinary and agricultural work would have been undertaken. An earlier chemist, Edward Davies, unrelated to this business, advertises himself in Harrods Directory as a 'dispensing chemist and guano merchant', indicative of the mixed trading that took place. David Powell Edwards, another Bishop's Castle trader, calls himself a druggist, veterinary chemist,

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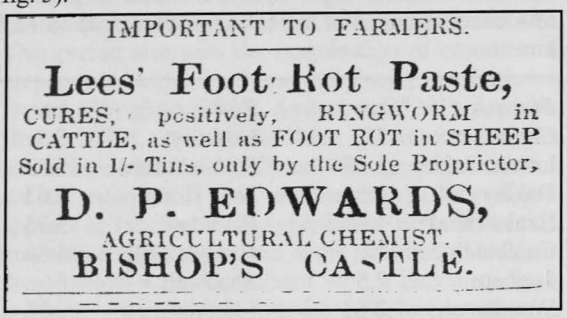
stationer, and placed a notice in the first edition of the town newspaper advertising his agricultural wares (see fig. 5).


IMPORTANT TO FARMERS.

Lees' Foot Rot Paste,

CURES, positively, RINGWORM in CATTLE, as well as FOOT ROT in SHEEP

Sold in 1/- Tins, only by the Sole Proprietor,

D. P. EDWARDS,

AGRICULTURAL CHEMIST.

BISHOP'S CASTLE.

Fig. 5. Powell's Advertisement appearing in the Bishop's Castle Advertiser and Clun News; No. 1 Friday October 5th 1900 price one penny.

The percentage proportion of preparations differs from that cited by Anderson in his comparison of 8 studies on prescription books. Oral preparations are by far the most frequent preparation comprising 62% (range 29 to 88%) compared to Anderson's 46% (range 38 to 61%) while oral solids account for 25% (range 2.6 to 42%) compared to 36.5% (range 12 to 51%) cited by Anderson. A stricter comparison can be made with Rowson's reports which cover an earlier period and whose classification was used in this work.

Analysis of the prescription book raises more questions than answers in this study. We need to look elsewhere for information on counter prescribing, especially for those unable to afford the services of a practitioner, and on the sales of nostrums. Furthermore, the records do not in themselves tell us anything about the general state of public health in this period. Further work is needed to provide these details.

Acknowledgements

I am deeply indebted to Alan Screen, MRPharmS for the extended loan of the prescription book used in this study and to Mr W Burt for his kind and helpful comments on the paper.

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The founder of the Polish and world oil industry: Polish pharmacist Ignacy Łukasiewicz and the 150th anniversary of the lighting of the first kerosene lamp

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The Polish Senate pronounced 2003 the Ignacy Łukasiewicz memorial year.[1] On July 31st 1853 Ignacy Łukasiewicz,[2] using oil of his own production and lamps of his own invention for the first time in the world, illuminated the operating theatre of the General Hospital of the Piarist Order in Lvov. Such usage of pure kerosene, obtained from crude oil, initiated the development of the Polish oil industry.

The use of the petroleum present in the Carpathian Mountains dates back to the 15th century Chronicles of Jan Długosz (Longinus). Other sources mention a royal document dated 1506 allowing the addition of mineral oil to linseed oil used for lighting the streets in Krosno. The medical application of the oil 'which comes from stones' was mentioned in Polish renaissance herbals. Subsequently such use was described by Erazm Syxt (1617), Wojciech Tylkowski (1695), Gabriel Rzaczyński (1721), Krzysztof Kłuk (1781), and Stanislaw Ladowski (1783). In 1788 Baltazar Hacquet described the natural source of petroleum in Węglówka, a means of obtaining it and some of its non-medical applications. However, in 1791 Józef Ignacy Martinovics (1755-1795),[3] a Hungarian of Croatian descent and professor of physics at the University of Lvov, published a report on experiments with petroleum discovered in Kałusz.[4] He managed to separate three fractions from oil, calculate their density relative to water and tried to separate the ingredients. He used petroleum to manufacture pills to counter an epidemic in lambs and to protect wood and iron against water.

In 1815 the priest Stanislaw Staszic in his work *On Minerals born in the Carpathians*[5] described mines in Węglówka, Stara Sól, Lack and Nahujowice as well as applications of the mined raw material *naphta bitumen fluidissimum, levissimum*. This raw material was particularly useful for lamps, lubricating wagon wheel hubs, impregnation of wooden fences against decay, for softening of wood and leather and for lubrication of rotating parts in mills and sawmills. The priest Franciszek Siarczyński[6] in the first year's issue of Ossoliński Library of 1828 listed similar applications of petroleum and additionally the anointment of cattle to counter epidemic. He also mentioned the illumination of streets in Lvov.

In July 1837 two pharmacists from Lvov, Józef Schöpf and Gabriel Mülling, carried out the thermal separation of hydrocarbons contained in a mixture of petroleum fractions and produced a gas which they used for the illumination of their own pharmacies. This method of

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obtaining such a lighting agent was burdensome and not widespread. In many towns of Western Europe, the gas obtained from coal was already used for lighting; however there was a lack of coal in the vicinity of Lvov. But petroleum was present and 30 pits were working in the Borysław region, producing 16 litres per day of petroleum in 1835.[7]

In the 1820s the scientists Ludwik Zejszner, Alojzy Alth and Roman Gostkowski began research on petroleum in Lvov and Cracow universities. At the same time geological studies of the Carpathian mountains and the Subcarpathian region were initiated. It was probably the lectures of professor Zejszner that inspired Łukaszewicz with interest in the chemical refining of petroleum.[8]

Ignacy Łukasiewicz was born on March 8th 1822 in Zaduszniki in southeast Poland. After completion of four years at the grammar school in Rzeszów, Ignacy Łukasiewicz started practical training at A. Swoboda's pharmacy in Lancut in 1836. After four years, he passed an apprenticeship examination (*tirocinium*) in Rzeszów and qualified as a 'Pharmacist's assistant'. On October 6th 1841 Łukasiewicz started to work at Edward Hubel's pharmacy in a senior post for 5 years. At the beginning of 1846 Łukasiewicz was forced to stop his work as he was arrested for underground patriotic activity until December 1847.[9] On August 15th 1848 he started work at Piotr Mikolasch's 'Golden Star' pharmacy in Lvov. In the years 1850-1852 he studied at the Jagiellonian University of Cracow. He completed his studies at the University of Vienna where he was awarded the degree and diploma of Master of Pharmaceutical Arts on July 30th 1852.

Łukasiewicz then returned to the 'Golden Star' pharmacy in Lvov and together with Jan Zeh[10] he researched a way of utilising local petroleum for preparing a well-known medicament *Oleum Petrae Album*,[11] which at that time was imported from Italy and very expensive. Meeting a lack of interest in the Polish market for this medicament, they switched their work to using the product of oil distillation for lighting purposes. They produced kerosene by refining crude petroleum. 'Having duly weighed the liquid (rock-oil) and stated it was much lighter than water, they treated it initially with sulphuric acid in order to carbonize the organic components and, then, after neutralization with lye, decanted the liquid and subjected it to distillation at the temperature of 250-350ºC.'[12] They obtained a fraction with a yellowish color and a characteristic smell. This product from fractional distillation in the range of 250ºC is still called petroleum (kerosene). During the first try, the use of kerosene in an oil lamp caused an explosion. Łukasiewicz, with the help of tinman Adam Bratkowski, designed a lamp, in which a porous match was immersed into kerosene and the flame was protected by a chimney made of mica. The air needed for the burning process went up the chimney from the bottom to the top. Such a lamp was lit for the first time in a window of the 'Golden Star' pharmacy in March 1853. In the same year, lamps invented by Łukasiewicz

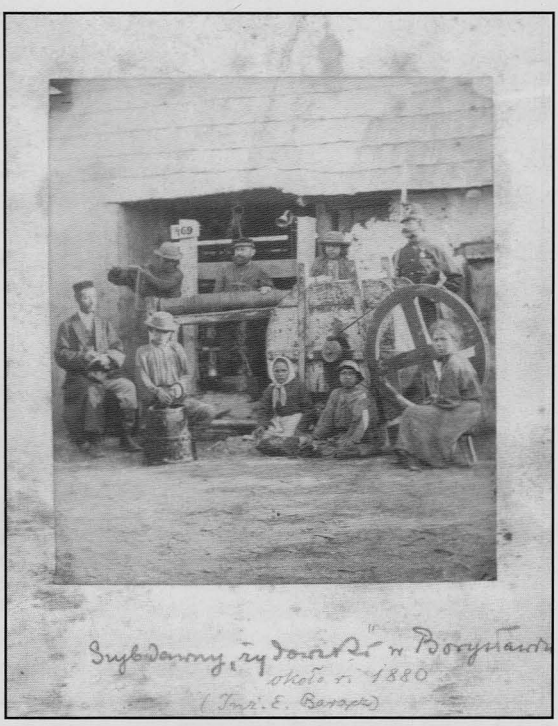

Figure 1. Oil-pit "Jewish" in Borysław.

were used for the first time for the illumination of the operation theatre in the Lvov hospital and of the city hall in Prague. Łukasiewicz did not patent his lamp and Rudolf Ditmat, a technician from Vienna, subsequently developed their lamp.

Meanwhile, on December 2nd 1853 the Royal and Imperial Patent Office of Austria granted Jan Zeh a two year patent for 'the invention of crude-oil purified chemically to such an extent that it is fit for direct application for technical purposes'. The same day both pharmacists Jan Zeh and Ignacy Łukasiewicz were granted a patent for obtaining paraffin candles from different kinds of soil resin.

In 1853 Łukasiewicz left Lvov and moved to the Subcarpathian region to be closer to the petroleum beds. He leased a pharmacy in Gorlice and continued his study on distillation of petroleum. In 1854 Łukasiewicz built the world's first oil pit in Bóbrka near Krosno. It was the first commercial enterprise whose objective was the mining of crude petroleum and its processing and sale. In 1856 Łukasiewicz established the first oil 'distillery' in Ulaszowice. He constantly developed new methods of mining and distillation of petroleum. Hand mining was replaced by well drilling using steam machinery and his oil wells reached 200 metres deep. Among people interested in his inventions was the American financier John Davison Rockefeller, later founder of the biggest petroleum concern, Standard Oil Company.

The huge petroleum bed with a capacity of 5 tonnes per day, reached in April, was a basis for founding the first documented petroleum company in which Karol Klobassa contributed the oil-bearing grounds, Tytus Trzecieski contributed ready money, and Łukasiewicz contributed his knowledge. The company made a big

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Figure 2. Oil-field near Borysław.

profit. The number of oil wells was growing and reached 35 solely in Bóbrka.

Łukasiewicz's financial situation allowed him to devote himself to social activities. In 1877 he was in the chair of the first Petroleum Congress in Lvov, in 1880 he founded the National Petroleum Society for Care and Development of Industry and Mining in Galicia, and in 1882 he started publishing the Górnik journal (*The Miner*). Łukasiewicz died, after a brief spell of pneumonia, at Chorkówka on January 7th 1882.[13]

To commemorate Ignacy Łukasiewicz the Polish Pharmaceutical Society established the Łukasiewicz Medal in 1967.[14] It is awarded for outstanding merit in Polish Pharmacy.

Acknowledgments. The photographs were taken by Walery Lozinski in Borysław about 1880. From the Archives of the Polish Academy of Sciences.

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Orvietan, a Popular and Controversial Panacea

Patrizia Catellani and Renzo Console

Orvietan, Mithridatium and Theriac: an introductory comparison

The antidote called Orvietan had a shorter, but no less interesting, life than the two most famous drugs in history: Mithridatium and Theriac.

While these two had their origin in classical antiquity and were prescribed, requested and used for nearly two thousand years, i.e. until mid-19th century, Orvietan came into use only much more recently, towards the end of the 16th century; and was no longer used by the 19th century. However, even then Theriac and Mithridatium had not completely lost their appeal.

While Mithridatium and Theriac were passed down through the centuries in the materia medica treatises, Orvietan was initially distributed, successfully and with a secret formula, by 'charlatans'. Only later and for a short time was it included in the pharmacopoeias. The charlatans, or itinerant vendors (Figure 1), not only spread Orvietan in market-places and fairs, but also at upper-class gatherings in Paris and Rome, where it became fashionable.

Theriac and Mithridatium were remedies well accepted by the official medical profession and no need was seen for discussions about their effectiveness; Orvietan, on the contrary, was essentially a popular remedy. It was recognised by the medical élite only for one century and always reluctantly. However its vendors, despite the opposition of the official doctors and pharmacists, enjoyed the protection of the powerful, including popes and monarchs.

Orvietan was given credit for the same virtues as those of its celebrated predecessors Theriac and Mithridatium, which were often also included in its formula. However its history is much more complex, controversial and also picturesque. It caused disagreement and jealousy in the medical and political field, and also between its vendors - the charlatans - and the members of the official pharmaceutical profession - the *speziali* in Italy and the *apothicaires* in France.

Orvietan gave rise to an excessive enthusiasm, certainly unjustified by evidence or logic. Doctors and pharmacists were unable to dampen this down. Valid though their arguments may have been, they failed to put off members of the public and even the upper classes ignored their disapproval and continued to take Orvietan seriously.

It is this confusion and incongruity which leads us to our present research: (1) on the activity of the 'charlatans', (2) on the reluctant and gradual acceptance of Orvietan in the treatises and pharmacopoeias, and (3) on this antidote seen through the non-medical literature.

What Was Orvietan?

Figure 1. An itinerant Orvietan vendor offers his product in the countryside. Wellcome Library, London.

Orvietan was an 'electuary', i.e. a compounded medicine containing 'elected' ('chosen') ingredients. It could be produced in a more solid or fluid form according to the degree of 'cooking' of the ingredients and the balance between powders and excipients.

It was regarded as an effective universal antidote against all poisons, for prevention when the possibility of poisoning was feared as well as when poison had already entered or developed inside the body of the patient.

It was recommended against poisons administered for criminal purposes or ingested accidentally, as in the case of poisonous mushrooms. It was also regarded as effective against bites and stings by poisonous or rabid animals (snakes, scorpions, dogs); and finally also against 'poisonous' illnesses, such as those that could produce toxic substances in the patient's body, like 'pestilential' or 'putrid' fevers.

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When it was in the form of a powder, Orvietan was packaged and sold in boxes of various sizes usually made of lead and wrapped in a leaflet explaining its properties and the correct doses.

In the course of the present research we have examined 35 different recipes, which include a total of 186 different ingredients (but never all in the same recipe, of course). Of these, 147 are simple herbals, 16 are simple substances of animal or mineral origin, and 23 are compounded preparations and excipients.

The Origin and Diffusion of the Remedy

It cannot be excluded that Orvietan may have had a more ancient origin; but it has always been reported that the remedy was invented and produced initially at Orvieto (in central Italy) towards the end of the 16th century by a messere Lupi, or by Girolamo Ferrante (or Ferranti). Then it spread into various parts of Italy and Europe, mainly thanks to the initiative of the Contugi family, who managed to obtain the monopoly of its preparation and sale from various authorities.

According to a legend[1] the remote origin of the remedy is related to a shepherd who attended his flock in the countryside near Orvieto. He observed that one of his sheep, having been bitten by a poisonous snake, was immediately cured by eating a certain aquatic plant. The shepherd adopted the plant as an antidote for all his flock; used it to save many people suffering from the plague; and finally revealed his secret to a doctor who transmitted it to the creators of Orvietan.

The sources actually available document the great popular success of Orvietan from the beginning of the 17th century especially in the States of the Church and also in France, where some of the Italian owners of the 'secret' decided to transfer their businesses. The formula of the product being sold was kept secret; but though that suited the owners of the monopoly, it nevertheless encouraged impostors to sell fake versions. This provoked the disapproval of doctors and pharmacists, as well as the anger of the Contugi family who owned the privilege of selling the product.

Initially doctors and pharmacists, fearing that their earnings would be seriously undermined, tried to stop the spread of the drug by accusing the merchants of being impostors who were selling a product of no value for a high price. At the same time they tried to counteract this activity by promoting the equivalent 'official' products: Theriac and Mithridatium.

Later, while the medical profession continued to reject Orvietan, pharmacists or apothecaries invented (or copied?) its formulae and presented them as genuine, at the same time accusing as an impostor anybody who made the antidote without using their elaborate methods.

They even organised solemn ceremonies for the public preparation of Orvietan in the presence of magistrates and representatives of the medical profession, similar to those for the preparation of Theriac. One of these ceremonies took place in Paris in 1731.[2] As a reaction, the owners of the privilege of selling the drug advertised their product even more sensationally.

The Word 'Orvietan' and Its Different Meanings

It may seem peculiar that the name of a medicine produced and sold by charlatans some centuries ago can be found in the common language, literary works, the correspondence of famous people, satirical pamphlets, commercial leaflets, the decrees of the highest authorities, the ruling of tribunals, treatises on the economy, pharmacopoeias, and medical encyclopaedias; and that it still appears today in dictionaries of the current language. However this is indeed true in the case of the term 'Orvietan'.

Towards the middle of the 17th century the word 'Orvietan' meant two different things, or rather one thing and one person. It was the drug advertised and sold as a universal panacea and an antidote against all poisons, but it also was the name by which Cristoforo Contugi himself, owner of its secret formula and of the privilege for its exclusive sale, wanted to be called and known. More specifically, both he and later his grandson and successor Jean-Louis defined themselves as 'the Orvietan of Rome',[3] literally identifying themselves with their product. For example, 'the Orvietan' is what Cristoforo was called in the anonymous songs and satirical booklets known as 'mazarinades', and he is named in the same way even in Louis XIV's official documents such as the 'lettres patentes'.

The great favour that Orvietan acquired amongst the upper class caused the word to come into common use. Writers used it to symbolise charlatanism, greed and theatrical behaviour, and in other situations not involving the sale of the antidote itself. It is in this way the term 'Orvietan vendor' has acquired a proverbial meaning.

The authors of conventional pharmacopoeias, in particular, did not accept Orvietan immediately and did not include it and its exceptional virtues in their texts for some time. They only started using the word Orvietan respectfully around 1655 in Germany,[4] 1667 in Italy,[5] 1674 in France[6] and 1678 in England[7,8] (but initially with some reluctance).

In the same period the fashion for Orvietan among the upper classes was used by humorists and satirists to castigate both the shows of the mountebanks and charlatans selling the antidote, and the credulity of their customers. By attacking these theatrical performances, the satire was intended - under disguise - as an attack against the protectors of the charlatans, i.e. the authorities and the clergy. In this way the Orvietan vendors became symbols of the hypocrisy and greed of politicians and prelates.

Earlier Historical Studies

Towards the end of the 19th century two French researchers, the pharmacist and Director of the École de Pharmacie de Paris Gustave Planchon (1833-1900) and Dr Claude-Stephen Le Paulmier (1828-1903) performed simultaneously, and independently, some extensive and accurate research on Orvietan in French

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archives and libraries, covering the same subjects and obtaining very similar results.

Planchon produced an essay entitled *Notes sur l'Histoire de l'Orviétan*,[9] published in five parts in the *Journal de Pharmacie et de Chimie* between August and October 1892. Le Paulmier produced a whole book entitled *L'Orviétan, Histoire d'une Famille de Charlatans du Pont-Neuf aux XVII^e et XVIII^e Siècles*,[10] published in 1893 but, according to the author, already completed before the work of the other author was published.

Before those two studies, an in-depth investigation of this subject had only been performed by Auguste Jal, who had included an important article on Cristoforo Contugi in his *Dictionnaire Critique de Biographie et d'Histoire*[11]. The second edition of that dictionary was used as a source by both the previously mentioned authors.

In 1910 Dr Augustin Cabanès (1862-1928), pharmacist, physician and scholarly writer, devoted an interesting chapter of his book *Remèdes d'Autrefois*[12] to Orvietan, but other than some difference in the style and some personal comments, all the information comes from Le Paulmier's study. Cabanès gives him credit several times, though he often forgets to do so.

Orvietan as a Business: the 'Charlatans'

The present section briefly describes the lives, activities and characters of some Orvietan vendors in chronological order. It also attempts to clarify their reasons and methods for seeking publicity, obtaining privileges from the civil authorities and gaining the acceptance of the medical profession - often without success.

Messere Lupi of Orvieto

Historically verifiable information about *Messere* Lupi of Orvieto has not emerged so far. Therefore, at the moment, we cannot say for sure whether he invented Orvietan; nor can we say who else, other than he, should be given credit for the invention. However the earliest reference that we have found about him in this context is by Auguste Jal,[13] who described him as a doctor or alchemist from Orvieto.

Girolamo Ferranti

The first clearly identifiable person in the history of Orvietan is Girolamo Ferranti, who demonstrated and sold drugs to the public in Paris in the early years of the 17th century. He had been born in Rome, had moved to France, and during one of his journeys back to his native place had married a compatriot called Clarissa and had brought her to France. In the course of his demonstrations Ferranti tried to impress the audience with the virtues of his drug. In fact he was, according to Van Helmont:[14]

> the first one who dared swallow, in front of the public, any unknown poison that was offered to him, relying on the virtue of his antidote to destroy its effect.

Courval wrote about Ferranti, whom he called '*il signore* Hyeronimo':[15]

> And in order to cheat and attract his audience more easily under a disguise of charity and courtesy, and to acquire credit, he pulled out the teeth of those who wanted them taken out without charging any money for his work, using for this purpose a great and wonderful artifice for pulling them, without causing any pain, and without using any instrument other than two fingers, i.e. his thumb and forefinger.

Jean Vetrario

Ferranti's wife Clarissa outlived Girolamo and inherited his 'secret'. She then married the 'empiricist' Verrier called Tramontan, born in Lorraine, who under the italianised name of Jean Vetrario (also spelled Vitrario) had obtained a licence of 'distiller and ordinary operator' from the king Louis XIII. Vetrario later obtained the privilege of selling Orvietan in all the States of the Church from cardinal Aldobrandini under Urban VIII in 1628.[16] As a result of her marriage Clarissa took the surname Vetraria or Vitraria.

Desiderio Descombes

Still in the early decades of the 17th century we find in Paris another interesting character involved in the sale of Orvietan: Desiderio Descombes, born in the Angoumois region of west France, but claiming to be of Italian origin.

He had arrived in Paris at the beginning of 1620 knowing that his drugs were already well received in many towns of France, as we can read in his unsuccessful petition of 1621 to the Parliament to obtain permission to sell his antidote in the capital. Descombes did not give up and immediately appealed again. It was only in 1625 that he succeeded in getting his coveted privilege to sell throughout France; in fact, the hostility of the medical profession towards him and his demonstrations and the sale of his drugs was strong.

However Descombes enjoyed the authorities' approval. The parliaments of Rennes and Rouen had already ruled in his favour some years earlier, and in 1620 the queen mother of Louis XIII had even presented him with a prize of 150 francs for a demonstration of his antidote which she had attended with

Figure 2. Cristoforo Contugi on stage in the role of Signor Spaccamonte. Le Paulmier, *L'Orviétan*.

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the King's physician and members of the Court. Nonetheless, Descombes was described as 'clumsy and rude; he cannot write or read, nor speak, and the little attention that he receives shows him as the most ignorant charlatan and the most shameless liar who has ever appeared on a stage'.[17]

In the same way, that is as a graceless, ugly and inarticulate man, he was described in a series of anonymous satirical pamphlets entitled *Caquets de l'Accouchée* – published separately in Paris in 1622 and then collected and republished almost immediately several times:[18]

> It is true that a good appearance sometimes convinces someone to buy the merchandise, even if one does not need it; but we cannot say so about Desiderio des Combes, called Charlatan, because he does not have an attractive face, and also lacks the beautiful words.

As regards the end of Descombes' career (according to Le Paulmier) 'Thomas Riollet ... reports [in 1665] that he was still dispensing his antidote in 1640, and has heard that he later died of the plague, in spite of his antidote'.

This certainly did no damage to the popularity of Orvietan, although it could have been bad publicity for the efficacy of the antidote, considering that the plague, the causes of which were not yet known, was itself usually included as a poison amongst those that Orvietan should have counteracted.

Cristoforo Contugi

Cristoforo (Christophe) Contugi had become the owner of the rights on Orvietan by marrying Clarisse Vitraria, and claiming in that way to be the heir of Jean Vetrario, successor of Girolamo Ferranti who had been declared the inventor of Orvietan.

In 1646 he and his wife obtained the citizenship of Paris, where he had moved permanently from Italy. By proclaiming himself the legitimate and exclusive owner of the secret of Orvietan, in 1647 he managed to obtain from King Louis XIV the exclusive privilege for the production and distribution of Orvietan in Paris and in the whole kingdom of France. Indeed he had great success at the Court and amongst the aristocracy.

However he never obtained the approval of the medical Faculty, which he sought repeatedly and unsuccessfully between 1648 and 1649. Nonetheless, according to official documents, he gained the title of *antidotaire du Roy* and was even described as *médecin romain*.

Although Contugi travelled to sell in different places and also was an itinerant actor (Figure 2), by 1668 he had already established a fixed site for his activities at the corner of rue Dauphine in front of the Pont-Neuf. This theatre-workshop became well known and continued to be used by his successors. Desiderio Descombes (mentioned above) had performed his activities in the same place approximately 40 years earlier.

Contugi adopted the emblem of the Sun as a trade mark for his Orvietan. It was a stylised sun with a human face, surrounded by the caption 'ut sol solus ut sal salus' (Figure 3). Cristoforo used it as the sign board of his shop and to characterise his leaflets; and at the same time he sought injunctions preventing its use by other charlatans.

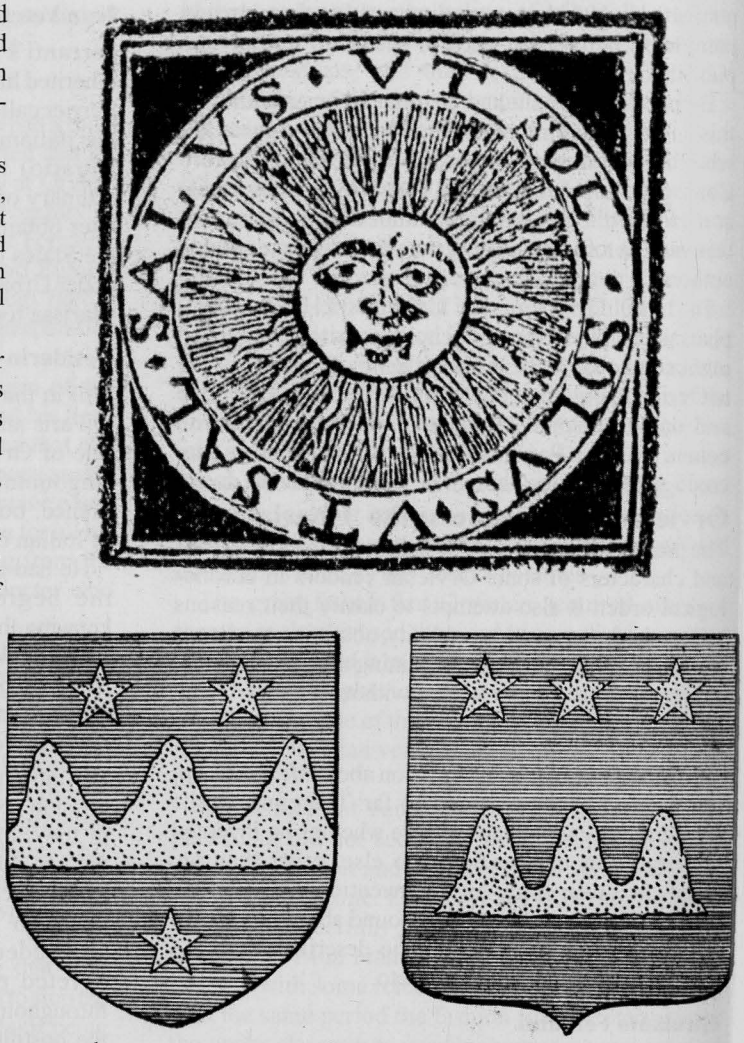

Figure 3. Contugi's emblem of the Sun and coats of arms. Le Paulmier, *L'Orviétan*.

Contugi's Orvietan was also an emetic. According to the humoral theory, vomiting caused by the remedy achieved the expulsion of the 'bad humours' from the body, removing both the cause and the effects of the disease.

Ferranti's and Descombes' Orvietans however,

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according to the ingredients in their formulae, did not provoke vomiting.

Contugi's Competitors

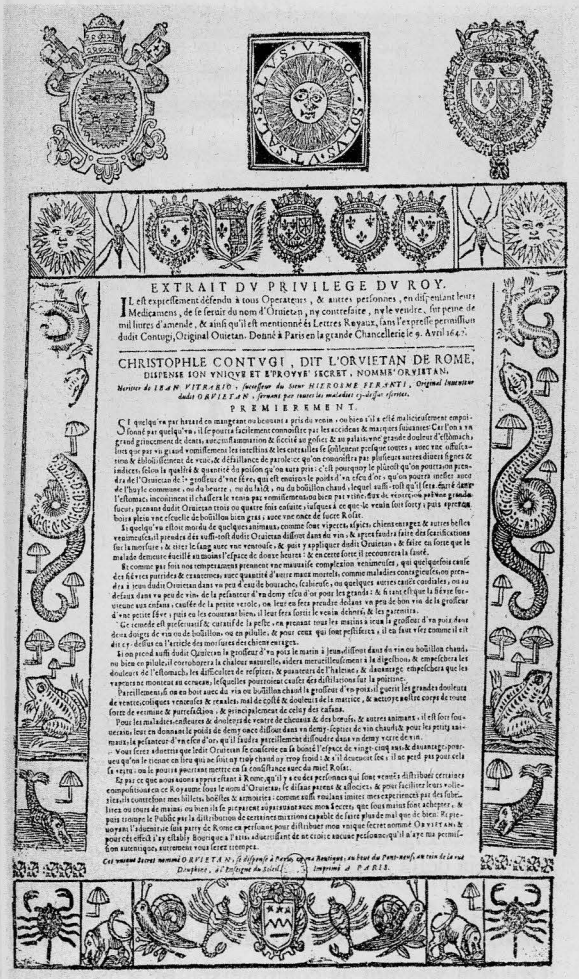
All leaflets (Figure 4) printed by Cristoforo Contugi and his successors protest against the counterfeiters who had been active in France ever since the time when he was in Rome and who continued to interfere in spite of his attempts to prevent them by moving to Paris.

The many privileges granted and confirmed to the Contugis by the King did not guarantee his and his family's monopoly: many 'operators' violated them openly, using the name 'Orvietan' and the emblem of the Sun that we have just mentioned.

As a result the Contugis reacted by repeatedly suing these commercial competitors. The most prominent among them were François Fossa, Christophe Poloni and Gilles Bary.

Charles Dionis

Dionis (1710-1776) was a well known 'orthodox' physician who had graduated in 1738 and later became professor of medicine at the Faculty of Paris.


EXTRAIT DV PRIVILEGE DV ROY.

IL eſt expreſſément défendu à tous Operateurs, & autres perſonnes, en diſſimulant leurs Medicamens, de ſe ſeruir du nom d'Orvietan, ny contrefaire, ny le vendre, ſur peine de mil liures d'amende, & ainſi qu'il eſt mentionné és Lettres Royaux, dans l'exprelle permiſſion dudit Contugi, Original Orvietan. Donné à Paris en la grande Chancellerie le 9. Avril 1647.

CHRISTOPHLE CONTVGI, DIT L'ORVIETAN DE ROME, DISPENSE ION VNIQVE ET E'PROVVE' SECRET, NOMME' ORVIETAN.

Heritier de IEAN VITRARIO, ſucceſſeur du Sieur HIEROSME FERAKTI, Original Inuenteur dudit ORVIETAN, ſeruants par toutes les maladies cy-deſſus ſpecifiées.

PREMIEREMENT.

Si quelque vn par hazard en mangeant ou beuuant a pris du venin, ou bien s'il a eſté malicieuſement compoſé par quelqu'vn, il le pourra facilement connoiſtre par les accidens & maux qui ſuiuent: Car l'on a vn grand grincement de dents, auec inflammation & ſecrité au goſier & au palais, vne grande douleur d'eſtomach, lors que par vn grand vomiſſement les inteſtins & les entrailles ſe ſoûleuent preſque toutes, auec vne obſcurité en la veûë, éblouiſſement de veûë, & défaillance de parole: ce qu'on connoiſtra par pluſieurs autres diuerſes figures & indices, ſelon la qualité & quantité du poiſon qu'on aura pris: c'eſt pourquoy le plûtoſt qu'on pourra prendra de l'Orvietan de la groſſeur d'vne féue, qui eſt enuiron le poids d'vn eſcu d'or, qu'on pourra meſler auec de l'huyle commune, ou du beurre frais, ou du laict, ou du boüillon chaud, lequel auſſi-toſt qu'il ſera dans l'eſtomach incontinent il chaſſera le venin par vomiſſement ou bien par vrine, ſuer &c. reconfortera grandement ſucceſſ. prenant dudit Orvietan trois ou quatre fois ſuſdite, ſi beſoin eſt, auec vn peu de vin ſoit ſec ou ſoit vn peu doux, ſelon la qualité de la perſonne, ou bien auec vne once de ſucre Roſat.

Si quelqu'vn eſtoit mordu de quelques animaux, comme ſont viperes, aſpics, chiens enragez & autres beſtes venimeuſes, il prendra dés auſſi-toſt dudit Orvietan diſſout dans des vins, & apres faudra faire des ſcarifications ſur la morſure, & tirer le ſang auec vne ventouſe, & puis y appliquer dudit Orvietan, & faire en ſorte que le malade demeure éueillé au moins l'eſpace de douze heures: & en cette ſorte il recouurera la ſanté.

Et comme pas ſois non ſeulement pruenent vne mauuaiſe complexion venimeuſes, qui quelquefois cauſe des fiévres putrides & cauſeuſes, auec quantité d'autre maux mortels, comme maladies contagieuſes, peſte, &c. il faut prendre dudit Orvietan dans vn peu d'eau de bouache, ſcabieuſe, ou quelques autres eaux cordiales, ou au défaut dans vn peu de vin: de la peſanteur d'vn demy eſcu d'or pour les grandes: & ſi tant eſt que la fiévre ſurvienne aux enfans, cauſée de la petite verole, on leur en fera prendre dedans vn peu de bon vin de la groſſeur d'vne petite féue, puis on les couurira bien, afin qu'ils ſuent fera ſortir le venin dehors, & les guarentira.

Ce remede eſt preſeruatif & curatif de la peſte, en prenant tous les matins à ieun la groſſeur d'vn pois dans deux doigts de vin ou de boüillon, ou en pilules, & pour ceux qui ſont preſtiferez, il en faut vſer comme il eſt dit cy-deſſus en l'article des morſures des chiens enragez.

Il on prend auſſi dudit Orvietan la groſſeur d'vn pois le matin à ieun diſſout dans du vin ou boüillon chaud, ou bien en pilules il conſeruera la chaleur naturelle, aidera merueilleuſement à la digeſtion, & empeſchera les douleurs de l'eſtomach, les difficultez de reſpirer, & pouſſeres de l'halenes, & dommage empeſchera que les vapeurs montent au cerueau, leſquelles pourroient cauſer des diſtillations ſur la poitrine.

Pareillement ſi on en boit auec du vin ou boüillon chaud la groſſeur d'vn pois il guerit les grandes douleurs de ventre coliques venteuſes & renales, mal de colé & douleurs de la matrice, & nettoye toutes le corps de toute ſorte de ſeremace & pourreſſeure, & principalement de celuy des rafans.

Pour les maladies enflueres & douleurs de ventre de cheuaux & des beufs, & autres animaux, il eſt fort ſouuerain, leur en donnant le poids de demy once diſſout dans vn demy-ſeptier de vin chaud, ou pour les petits animaux, le peſanteur d'vn eſcu d'or, qu'il faudra pareillement diſſoudre dans vn demy verre de vin.

Vous ſerez aduertis que ledit Orvietan ſe conſerue en ſa bonté l'eſpace de vingt-cinq ans, & dauantage pourueu qu'on le tienne en lieu qui ne ſoit ny trop chaud ny trop froid: & s'il deuenoit ſec, il ne perd pas pour cela ſa vertu, on le pourra pourtant mettre en la conſiſtance auec du miel Roſat.

Et par ce que nous auons appreſtant à Rome, qu'il y a eu des perſonnes qui ſont venuës diſtribuer certaines compoſitions en ce Royaume ſous le nom d'Orvietan, & d'faut parens & affociez, & pour faciliter leurs volleries ils contrefont mes billets, boëtes & armoiries: comme auſſi voulans imiter mes experiences par des ſubtilitez, ou tours de mains, ou bien ils ſe preſentent aupreſtant vers mon Ancetre, qui ſous mains ſont achepter, & puis trompe le Public par la diſtribution de certaines mixtions capable de faire plus de mal que de bien. Et prenoyant l'aduentage ſuis party de Rome en perſonne pour diſtribuer mon vnique ſecret nommé Orvietan & pour ces effets j'ay eſtably Boutique à Paris, aduertiſſant de ne croire aucune perſonne qui il n'ayt ma permiſſion ſous mon ſeing, & armoiries, vous ſerez trompez.

Ce vrayment Secret nommé ORVIETAN, ſe diſpenſe à Paris, chez Boutique, au bout du Pont-neuf, au coin de la rue Dauphine, à l'Enſeigne du Soleil. Imprimé à PARIS.

Figure 4. Contugi's advertisement. Le Paulmier, *L'Orviétan*.

But this great respectability did not prevent him from turning into a 'charlatan' by acquiring the privilege to sell Orvietan from the Contugi family for a perpetual pension of 1000 francs. The transfer of the privilege was guaranteed by Louis XV in 1741 with the *Lettres patentes de privilège exclusif pour la composition de l'antidote appelé orviétan, en faveur du sieur Dionis*, also confirmed in 1755 and 1772.

Dionis did not hesitate to associate with genuine charlatans like Portier, Agironi, Cuchet, Peutot and Lécluse. His association with Agironi was criticised in the satirical poem L'Art Ïatrique,[19] published anonymously in 1766 but attributed to Louis-Henri Bourdelin. Cabanès disapproved of Dionis' activities with the charlatans by writing:[20]

> With disregard for his glorious name, ... he trafficked miserably with his remedy, dealing with dentists and charlatans for the sale of the famous drug. ... [But] the sales were dwindling and the benefits were diminishing. Dionis, instead of a shop, had to use a room on the fourth floor, and a local apothecary [Regnard] remained the only owner of the precious remedy.

Immediately after Dionis' death his property was sealed off for some time while a legal dispute was taking place between his heirs and those of Contugi.[21] The latter finally obtained payment of the arrears due to them; but the privilege did not return to the Contugis.

Orvietan in Medical and Pharmaceutical Texts

Although Ovietan had only one intended use, i.e. as a counter-poison, it had more than one formula – indeed we have many different recipes published over more than a century.

Orvietan was initially distributed by 'charlatans' who kept their formula (or formulae) secret. But in so doing, while they protected themselves from their competitors, they stimulated imitations and encouraged the spread of different formulae.

In fact, not only the charlatans, but for a period of time many doctors and apothecaries also produced increasingly complex new versions of the electuary, always presenting them as 'genuine'.

Orvietanum Praestantius (or 'More Perfect', 'Sublime')

Planchon[22] has identified two main schools of thought amongst prestigious authors who formulated and recommended Orvietan: the first one was based on the 'true' Italian Orvietan which included Theriac and sometimes also Mithridatium (Schröder, Lyons, Lille, Charas, Bate); the second one only aimed at preparing *Orvietanum Praestantius* (Lémery, *Paris Codex*). Praestantius means 'more perfect' or 'perfected'.

Although *Orvietanum Praestantius* never contained Theriac or Mithridatium, it was nevertheless an opiate like both those remedies, i.e. a narcotic analgesic containing opium. Therefore its use, like that of the

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other two drugs, caused drug addiction. Those who started using it regularly could not give it up and had to take more and more of it to obtain the same effects.

Orvietan in Pharmaceutical Treatises

The formulae with their ingredients can be found in four main groups of texts:

(1) pharmaceutical treatises;

(2) 'charitable', 'curious' (i.e. intended to amaze the readers) and encyclopaedic works;

(3) official pharmacopoeias;

(4) formulae of the 'charlatans' reported by their contemporaries.

For a long time the 'official' physicians and pharmacists remained reluctant to include Orvietan in their collections of recipes because they did not want to be seen as charlatans. For example, we cannot find Orvietan in Italian *antidotari* until after 1660. However at some point they decided to publish their own formulae and made them increasingly sophisticated. With few exceptions, the authors claimed credit for the formulae that they were publishing, and each of them stated that his own was 'genuine', i.e. one which had been passed down faithfully and possibly refined and improved. However all those formulae were different from each other.

Schröder

As far as we have been able to ascertain, Johann Schröder (1600-1664) was the first 'respectable' and 'well known' physician who published his own Orvietan formula in 1655, including it in an important treatise accepted by doctors and pharmacists of his time.[23]

Charas

Moyse Charas (1619-1698) was the first pharmacist (as distinct from physician) who published his own formula of Orvietan.[24] He included it in his *Pharmacopée Royale* and made a very precise distinction between the 'genuine' one prepared correctly (by him) and those sold by the 'charlatans'. This is how he expressed his disapproval of the latter:[25]

> The good effects that the Orvietan well-prepar'd has formerly produc'd, has giv'n occasion to divers cheats, to use *all their endeavours to make the World believe, that either they or some of their Predecessors have been the sole inventers thereof, and that only they had the true Receipt.* Insomuch that several of these *Impostors* have over-spread Provinces and Kingdoms, and *under the fraudolent appearance of some good success, by pantalooning and bufooning it, before the credulous people in public places, have caught them by their Money*, and got considerable sums together, by the extraordinary vent of their suppos'd Orvietan. Considering the great quantity whereof, it was impossible for them to have found the necessary Ingredients, or to have had time to make a just Preparation, if they had either been willing, or had been able. Whence it has come to pass, that in several places they have not been able to secure themselves upon their Stages from the Poysons that have been brought them, by Persons that were not of their own confederacy, no more than from the bitings of Asps and Vipers with which they had not been before familiar. Had these Impostors met with distrustful persons that took delight to discover their Impostures, they had not over-run so many Countries, nor cousen'd such a World of people; nor would they have had such easie Licences to prepare and sell unpunish'd a Medicine that ought not to pass the hands of any but Men of credit and understanding.

However what Charas wrote in this document resembles very closely what the charlatan Cristoforo Contugi had written against his competitors some years earlier in his leaflets with the King's approval! The very harsh criticism of the 'impostors' who sold Orvietan, quoted above, is in the first edition of the *Pharmacopée*; but few years later Charas moderated his language. He removed all the phrases shown in italics, probably because they might appear as criticisms of the King and the Pope, both of whom had supported the charlatans.

Charas' formula is similar to the earlier one of Lyons pharmacopoeia. The author however did not explain how he had developed his recipe. Charas' Orvietan was not emetic (Figure 5).

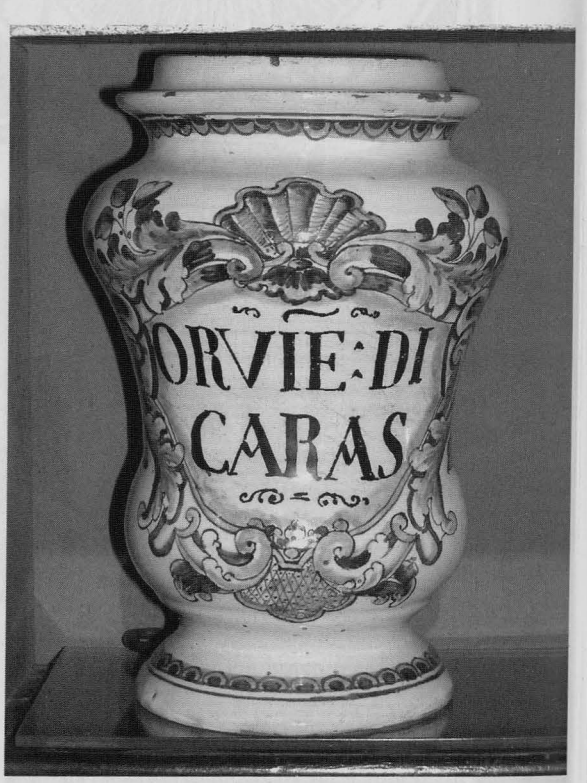

Figure 5. Eighteenth century jar for Charas' Orvietan. Farmacia della Scaletta, Imola.

British Pharmaceutical Treatises

Orvietan was not as controversial or sensational in Great Britain as it was on the Continent. It appeared almost simultaneously in 1678 in William Salmon's

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Pharmacopoeia Londinensis under the heading *Electuarium Orvietanum, an Italian Confect Against the Plague*, and in the English edition of Charas' *Pharmacopée Royale*.[26]

George Bate was physician to King Charles II. His prescriptions were collected after his death (1669) by the apothecary James Shipton and published in 1688 under the title *Pharmacopoeia Bateana*. The book contains a recipe of Orvietan. This could be one of the earliest formulae of Orvietan described by a professional physician, if it indeed came from Bate's papers. However a note, possibly written by Shipton, says: 'This was communicated to me by Sir Robert Talbor, *Equites Auratus*.'[27] There is also a formula of Orvietan in William Salmon's *Doron Medicum*,[28] but it is the one described by Charas.

References to Orvietan in English can also be found in the *Lexicon Physico-Medicum* by John Quincy (1730), in the *Cyclopaedia* by Ephraim Chambers (1738) and in *A New Medical Dictionary* by George Motherby (1775).

As regards the first appearance of Orvietan in England, we find this in *The Quacks of Old London* by C.J.S. Thompson (1928):

> Orvietan was an antidote electuary, first introduced by a quack into England who came from Orvieto about 1647.

Orvietan in 'Charitable', 'Curious' and Encyclopaedic Works

In the 17th and 18th centuries some authors decided that it would be in a good cause to write books - with the word 'charitable' often included in the title - to help the production of low cost medicines for those who could not afford to buy the classic compositions. In the same period we see the appearance of small 'curious' publications intended for the general public rather than for the practitioners. These contained all sorts of curiosities in addition to pharmaceutical recipes and many suggestions of a domestic nature. Lastly, at a later stage we see the publication of encyclopaedic works, both general and medical. A number of these three types of work, intended for the general public, contained Orvietan formulae, thereby confirming the popularity of this drug.

The 'Ideal' Orvietan

We have found and examined 35 different recipes of Orvietan published between 1655 and 1857. Most of them were created in the 17th century. The recipes differ widely as regards the ingredients and the numbers of them. This is probably a unique characteristic of Orvietan among famous medicines.

The average number of ingredients is 26, but varies between 9 (the recipe of a 'charlatan' who might have been Descombes) and 57 (La Martinière's recipe). If we therefore choose the 26 ingredients found most frequently, it is possible to build an 'ideal' recipe, which in theory should have generated the best consensus amongst the original authors.

Our 'ideal' recipe, with the numbers of different recipes that contain each ingredient shown in brackets, is:

> roots of *Angelica* (32), *Anthora* (12), *Aristolochia longa* (20), *Aristolochia rotunda* (23), *Bistorta* (20), *Calamus aromaticus* (14), *Carlina* (26), *Dictamnus albus* (31), *Gentiana* (25), *Imperatoria* (23), *Scorzonera* (17), *Tormentilla* (21) and *Valeriana* (17); leaves of *Carduus benedictus* (18), *Origanum dictamnus* (16), *Ruta* (13) and *Scordium* (17); berries of *Laurus* (16) and *Juniperus* (14); *Cinnamomum* (15); *Eugenia caryophyllata* (17); flesh of viper (17); Mithridatium (14); old Theriac (28); white wine (13); skimmed honey (29).

This exercise, albeit artificial, may give readers an idea of the composition of the famous Orvietan.

Orvietan in Literature

Orvietan has often appeared in fictional literature, in many cases long after the 17th century, which shows how widespread its popularity has been. Despite the hostility of the medical profession and the tensions and conflicts with the official pharmacists, the publicity achieved by the Orvietan vendors had been effective, convincing members of the aristocracy, rather than making them sceptical. The use of the antidote had become one of the favourite subjects at sophisticated high society gatherings and, as a consequence, was also popular among those who wanted to imitate the upper class.

We have found many examples of this fashion, which had started around 1660, in various types of literature:

- theatre (farces, commedia dell'arte, traditional and Court theatre);
- political, religious and popular satire;
- poetry;
- personal, economic and journalistic memoirs;
- court rulings;
- tales and novels.

We have limited ourselves here to one important English language author.

Sir Walter Scott

Scott (1771-1832) was one of the best and most successful Scottish authors. After working as a lawyer, he devoted himself with much passion to writing historical novels. In 1821 he published Kenilworth, which has the reign of Elizabeth I as its historical background. We are particularly interested here in Chapter XII, where the author describes the preparation of Orvietan by Wayland Smith, actor and juggler, a brilliant and very able person employed by the nobleman Tressilian.

We know that Scott often used to take some liberties with geography and chronology, and Wayland's Orvietan seems to be placed slightly too early in time, bearing in mind that Elizabeth I reigned from 1558 to 1603. Scott shows us the two characters walking in the streets of London, trying to buy the best ingredients to prepare Orvietan:[29]

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Wayland Smith [...] stipulated that his master should enter the shops of such chemists or apothecaries as he should point out, in walking through Fleet Street, and permit him to make some necessary purchases. Tressilian agreed, and obeying the signal of his attendant, walked successively into more than four or five shops, where he observed that Wayland purchased in each only one single drug, in various quantities. The medicines which he first asked for were readily furnished, each in succession, but those which he afterwards required were less easily supplied; and Tressilian observed that Wayland more than once, to the surprise of the shopkeeper, returned the gum or herb that was offered to him, and compelled him to exchange it for the right sort, or else went on to seek it elsewhere. But one ingredient, in particular, seemed almost impossible to be found. Some chemists plainly admitted they had never seen it; others denied that such a drug existed, excepting in the imagination of crazy alchemists; and most of them attempted to satisfy their customer, by producing some substitute, which, when rejected by Wayland, as not being what he had asked for, they maintained possessed, in a superior degree, the self-same qualities. In general they all displayed some curiosity concerning the purpose for which he wanted it. One old, meagre chemist, to whom the artist put the usual question, in terms which Tressilian neither understood nor could recollect, answered frankly, there was none of that drug in London, unless Yoglan the Jew chanced to have some of it upon hand.

Then Wayland, followed by Tressilian, goes to Yoglan's shop to find such a rare drug:

The shop under which he halted had not, as in modern days, a glazed window, but a paltry canvas screen surrounded such a stall as a cobbler now occupies, having the front open, much in the manner of a fishmonger's booth of the present day. A little old smock-faced man, the very reverse of a Jew in complexion, for he was very soft-haired as well as beardless, appeared, and with many courtesies asked Wayland what he pleased to want. He had no sooner named the drug, than the Jew started and looked surprised.

"And vat might your vorship vant vith that drug, which is not named, mein God, in forty years as I have been chemist here?"

"These questions it is no part of my commission to answer," said Wayland; "I only wish to know if you have what I want, and having it, are willing to sell it?"

"Ay, mein God, for having it, that I have, and for selling it, I am a chemist, and sell every drug." So saying, he exhibited a powder, and then continued, "But it will cost much moneys. Vat I ave cost its weight in gold - ay, gold well-refined - I vilI say six times. It comes from Mount Sinai, where we had our blessed Law given forth, and the plant blossoms but once in one hundred year."

"I do not know how often it is gathered on Mount Sinai," said Wayland, after looking at the drug offered him with great disdain, "but I will wager my sword and buckler against your gaberdine, that this trash you offer me, instead of what I asked for, may be had for gathering any day of the week in the castle ditch of Aleppo."

"You are a rude man," said the Jew; "and, besides, I ave no better than that - or if I ave, I will not sell it without order of a physician, or without you tell me vat you make of it."

The artist made brief answer in a language of which Tressilian could not understand a word, and which seemed to strike the Jew with the utmost astonishment.

We do not know what Wayland said, but Yoglan seemed to have recognised a 'mighty hero' – as Scott writes – and suddenly became extremely obsequious:

"Vill you not taste a cup vith the poor Jew, Zacharias Yoglan? - Vill you Tokay ave? - vill you Lachrymae taste? - vill you –"

"You offend in your proffers," said Wayland; "minister to me in what I require of you, and forbear further discourse."

The rebuked Israelite took his bunch of keys, and opening with circumspection a cabinet which seemed more strongly secured than the other cases of drugs and medicines amongst which it stood, he drew out a little secret drawer, having a glass lid, and containing a small portion of a black powder. This he offered to Wayland, his manner conveying the deepest devotion towards him, though an avaricious and jealous expression, which seemed to grudge every grain of what his customer was about to possess himself, disputed ground in his countenance with the obsequious deference which he desired it should exhibit.

"Have you scales?" said Wayland.

The Jew pointed to those which lay ready for common use in the shop, but he did so with a puzzled expression of doubt and fear, which did not escape the artist.

"They must be other than these," said Wayland sternly. "Know you not that holy things lose their virtue if weighed in an unjust balance?"

The Jew hung his head, took from a steel-plated casket a pair of scales beautifully mounted, and said, as he adjusted them for the artist's use, "With these I do mine own experiment - one hair of the high-priest's beard would turn them."

"It suffices," said the artist, and weighed out two drachms for himself of the black powder, which he very carefully folded up, and put into his pouch with the other drugs. He then demanded the price of the Jew, who answered, shaking his head and bowing,

"No price - no, nothing at all from such as you. But you will see the poor Jew again? You will look into his laboratory, where, God help him, he hath dried himself to the substance of the withered gourd of Jonah, the holy prophet. You will ave pity on him, and show him one little step on the great road?"

"Hush!" said Wayland, laying his finger mysteriously on his mouth; "it may be we shall meet again. Thou hast already the *Schahmajm*, as thine own Rabbis call it - the general creation; watch, therefore, and pray, for thou must attain the knowledge of Alchahest Elixir Samech ere I may commune further with thee." Then returning with a slight nod the reverential congees of the Jew, he walked gravely up the lane, followed by his master.

After leaving Yoglan's shop, Tressilian complains to Wayland because he has accepted the precious drug gratis. He replies that the pharmacist has tried to cheat him when he believed he was a poor servant; and adds that he could have sold brick dust to Yoglan as philosopher's stone for the price of gold; and that the 'poor' Yoglan has enough wealth to pave the lane where he lives with coins.

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At the end of the episode we have this dialogue between Tressilian and Wayland:

"I trust thou hast made up thy purchases?"

"I have, sir," replied Wayland; "and with these drugs will I, this very day, compound the true Orvietan, that noble medicine which is so seldom found genuine and effective within these realms of Europe, for want of that most rare and precious drug which I got but now from Yoglan."[30]

"But why not have made all your purchases at one shop?" said his master; "we have lost nearly an hour in running from one pounder of simples to another."

"Content you, sir," said Wayland. "No man shall learn my secret; and it would not be mine long, were I to buy all my materials from one chemist."

They now returned to their inn [...]; and [...] Wayland, obtaining from the cook the service of a mortar, shut himself up in a private chamber, where he mixed, pounded, and amalgamated the drugs which he had bought, each in its due proportion, with a readiness and address that plainly showed him well practised in all the manual operations of pharmacy.

The present article is based on a recent book (in Italian) by the same authors: *L'Orvietano*, Accademia Nazionale di Scienze, Lettere e Arti di Modena *(info@accademiasla-mo.it)*; Pisa: Edizioni ETS, 2004.

The research summarised here, including lists of ingredients in the various sources, is fully developed and documented in the book. A limited number of copies are available from the authors at *mail@renzoconsole.demon.co.uk* (postage costs only).

Acknowledgements

The authors, who are not native English speakers, wish to thank Michael Taylor for revising the text and William Jackson for providing references to Orvietan in old British pharmaceutical books.

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Royal Apothecaries

Royal apothecaries have recently been in the news. Dee Cook, archivist of the Society of Apothecaries, has provided the following information. Apothecary to the Queen is Dr T H D Evans, who succeeded Sir Nigel Southward. Dr Jonathan Holliday is Apothecary to the Royal Household at Windsor. Dr D C Mitchell is Apothecary to the Prince of Wales at Cirencester while Dr Peter Wheeler is Apothecary to the Household of the Prince of Wales. There are other Apothecary to the Household posts at Sandringham, Balmoral and the Palace of Holyroodhouse.

A modern apothecary is said to be a doctor (GP) who dispenses his or her own medicines.

Review

A Social History of Medicines in the Twentieth Century: To Be Taken Three Times a Day

John K Crellin. Binghampton, New York: The Howarth Press Inc, 2004, pp.340.

Medicines today play a central role in the health of people everywhere. Yet during the course of the twentieth century they underwent an almost total transformation, from largely worthless quack remedies at its start to mainly prescription drugs at its end. Though much has been written about the discovery, development and regulation of medicines during this period, surprisingly little has been written about their social history.

Much of what has been written on the history of medicines takes the form of biographies of remedies, accounts of therapeutic discoveries, or histories of pharmaceutical manufacturers. Much less has been written about the social context of medicines from a historical perspective: about the people who used them and why; about the differences in medicines beliefs and usage between urban and rural communities; and about the relationship between those that prescribe medicines and those that take them.

This important book fills that gap. It focuses on the everyday usage of medicines rather than their discovery. It uncovers the complexity and uncertainty that surround such use. It documents the rise of consumerism and exposes the diminishing authority of physicians in the later decades of the twentieth century. In it Crellin successively lays bare the bewildering range of factors that shape the nature, acceptance and validation of medicines, not only by physicians but also by patients and the public in general.

The book is divided into six main chapters. The first sets the scene for what follows. It discusses the social validation of medicines, regionalism in the history of medicines and the impact of colonialism. The second provides a brief overview of developments during the seventeenth to nineteenth centuries, with particular reference to Newfoundland. It explores how the boundaries between self and professional care changed, and how self care increasingly drew on new alternative medical practices.

The core of the book is a detailed discussion of the twentieth century. Crellin draws a clear distinction between the first and second halves of the century. The first is viewed as one of dominance of medical authority, which owed much to the new public optimism that science was finding solutions to both diagnostic and treatment problems. In contrast, the second half is seen as a period of curtailment of medical authority, resulting from such challenges to the profession as patients' rights and widespread acceptance of alternative forms of medicine.

In his third chapter Crellin explores the link between prevailing social conditions and the availability of medicines for 'weakness' during the first half of twentieth century. He takes us through the various categories of such medicines, from health foods and tonics to fortifiers for specific diseases such as tuberculosis. In chapter four he analyses the issue of medical authority and the role of gatekeeping: he considers the changing nature of the doctor-patient relationship, patients' faith in both medicines and those that prescribe them, and the evolving nature of the role of the pharmacist.

The remaining chapters focus on the second half of the twentieth century. Crellin explores an apparent paradox in relation to medicines: on the one hand, people expect science to come up with safe, effective evidence-based medicines for every ailment; on the other there is widespread acceptance of complementary and alternative medicine, despite the lack of scientific evidence of efficacy or safety. Crellin considers the many developments and influences that have contributed to this paradox.

The cultural specificity of the social history of medicines is richly illustrated in this book by using Newfoundland as a case study. Newfoundland provides the ideal context from which to reflect on developments in both the old world (Great Britain) and the new (Canada and the United States). Extensive documentary evidence from a very wide range of printed sources is augmented by oral history. Personal testimony has been garnered from both formal interviews and informal discussions with doctors, pharmacists, and lay people over a number of years.

The book is written with a wide audience in mind. The author possesses that rare ability to both inform and entertain the general reader whilst simultaneously providing a valuable contribution to relevant debates for the academic one. The book is extensively referenced and provides the kind of comprehensive footnotes that come only from a lifetime of enquiry and scholarship. The voices of the people, and particularly those of the elders in the community , provide a richness that is often missing in biographies of remedies.

This book will find an important place on the shelves of all those with an interest in the history of medicines and their uses.

Stuart Anderson

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Oxford Dictionary of National Biography

Oxford University Press, ISBN: 0-19-861413-6. Price (60 hardback vols) £7500 or $13,000.

The *Oxford Dictionary of National Biography* was published by the Oxford University Press in September 2004 and contains many entries of interest to pharmacists. Pharmaceutical historians were among the 10,000 contributors involved in writing monographs on pharmacists and scientists.

Contributions by former BSHP president Dr Melvin Earles relate to pharmacology and toxicology but three at least are of pharmaceutical interest: Sir Frank Hartley, Dean at the School of Pharmacy and Vice Chancellor, University of London; Dr G.A.H. Buttle, famed for his contribution to war medicine and later Professor of Pharmacology at the School; and Sir John Gaddum whose textbook was widely used by pharmacy students. There are updated entries for Jacob Bell, William Allen and others.

The *DNB* is available in 60 printed volumes containing 60 million words and online. The online version complements the printed book. While the online edition makes light of searching and navigation, many readers still prefer to read longer articles in a printed book.

The books were printed by Butler and Tanner, founded in 1835 by two pharmacists, William Langford and W.T. Butler: Langford set up the printing works to print labels.

The *Index of Contributors,* edited by Colin Matthew, Professor of Modern History, University of Oxford and Brian Harrison, Professor of Modern History, University of Oxford, is sold separately at £60.00

Further information from *www.oup.co.uk/isbn/0-19-861413-6*

Dr Mary Samuel, speaker at the February 2005 meeting on The History of Chinese Herbal Medicine, with BSHP President Dr Stuart Anderson (left) and RPSGB President Nicholas Wood

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British Society for the History of Pharmacy

840 Melton Road, Thurmaston, Leicester, LE4 8BN
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The British Society for the History of Pharmacy was formed in 1967 under the aegis of the Pharmaceutical Society of Great Britain, having originated from its History of Pharmacy Committee.

BSHP seeks to act as a focus for the development of all areas of the history of Pharmacy, from the works of the ancient apothecary to today's ever changing role of the community, hospital, wholesale or industrial pharmacist.

Aims

Promotion of historical studies related to pharmacy.
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Preservation of pharmaceutical artefacts and historic pharmacies.
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Co-operation with related professions and local historians on medico-pharmaceutical topics of mutual interest.

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The *Pharmaceutical Historian* has been published since 1967, at first intermittently, but on a regular quarterly basis from 1972.

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Papers, short communications and letters in English on any aspect of the history of pharmacy are welcome and should be sent to the address above or by email to *bshpeditor@associationhq.org.uk*

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Editor: Ainley Wade, BPharm, MPhil, FRPharmS
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Contents

Museum seeks Open House volunteers

The Museum of the Royal Pharmaceutical Society is taking part in this year's London Open House weekend by providing guided tours of the Society's headquarters and the museum displays on the morning of **Saturday 17th September**. As in previous years, it would very much welcome any voluntary guides to assist museum staff in showing visitors around the building. Full training given, travel expenses paid, and the possibility of an Open House pass that allows priority entrance to other participating buildings over the weekend.

If you are interested or would like further information, please contact Briony Hudson, Keeper of the Museum Collections, RPSGB, 1 Lambeth High Street, London SE1 7JN, 020 7572 2210 or bhudson@rpsgb.org

Diary

Wednesday 28 September 2005
'From chemicals to pharmaceuticals to biotech: The transformation of ICI in the twentieth century' by Dr Viviane Quirke of Oxford Brookes University. Lambeth, 6.30 pm

Wednesday 16 November 2005
'An Occasion at Once Historical and Novel: The Foundation of the National Association of Women Pharmacists', by Dr Sue Symonds of Nottingham University, and a member of the NAWP Executive. This is a joint meeting between BSHP, RPSGB and NAWP. Lambeth 6.30 pm

Future dates 2006
Wednesdays 15 February; 10 May (Foundation Lecture); 21 June (afternoon); 20 September; 15 November

Annual Spring Conference at Bath
31 March – 2 April 2006
To be held at the Lansdown Grove Hotel, Bath (see below).

1-4 September 2005
BSHM 21st Congress at Exeter. Details from Secretary.

Lansdown Grove Hotel, Bath

https://doi.org/10.1258/abstj.004.001802140835

The unfortunate Mr Jukes , the flexible clysma-duct and the improved stomach pump

W A Jackson

Edward Jukes, surgeon, author and inventor

Some years ago I purchased a book by Edward Jukes, a Westminster surgeon, entitled *On Indigestion and Costiveness.*[1] It dealt at length with the subject of enemas, or lavements[2] as they were frequently called at the time, and the devices used to administer them.

The book was written to appeal to the general public rather than the medical profession, and suggested that anybody suffering from any of a wide range of complaints associated with the digestive system would be well advised to purchase one of two appliances that he described. Mr Jukes, unlike most of the doctors who were his contemporaries, was at least as interested in making money from anything he invented as he was in benefiting mankind, and had a financial interest in both of these products.

Jukes' inventions

He recommended two types of apparatus, a brass syringe that he had invented with a capacity of two ounces,[3] and a gravity-powered device[4] that he considered to be superior because it required no exertion on the part of the patient and was 'so *gentle* that *no pain* or other inconvenience can attend its use.' This he called 'the clysma-duct', a name derived from the French word 'clysoir', an injection-tube. It consisted of an India-rubber tube, approximately four feet in length and tapering from four inches in diameter at its upper extremity to half an inch at its lower end. This was attached to a tube fitted with a stopcock that terminated in an ivory pipe. He observed that this had recently been introduced in 'practise' (sic) in Paris, and was particularly suited for use by females because it could be used 'without the slightest appearance of indelicacy (which is not the case with syringes)' and could be used for afflictions of the womb as well as in diseases of the bowels. In use, the stopcock would be closed and the required amount of medicated enema poured into the tube, or, in the case of a simple (unmedicated) lavement, filled to within four inches (10 cm)of the top. Upon opening the stopcock the liquid would be introduced into the bowel by the force of gravity. A significant selling point was that it could be used

> in a sitting, lying, or standing posture, without the least difficulty to the patient, or *exposure of the person,* whether it be used by the patient herself, or administered by another individual.[5]

Obviously the italics indicate that modesty was of greater importance than convenience.

Recipes for enemata

The following pages contained recipes for 42 injections (enemata), divided into laxative, purgative, purgatives combined with anti-spasmodics, astringents, anthelmintics, anodynes, tonics, stimulants, demulcents and nutrients.[6]

The laxatives vary in complexity from a mixture of thin gruel and common salt to one of senna leaves, scraped ginger, boiling water, soft soap, Epsom salts and antimonial wine. The purgatives include a formidable mixture of croton oil, syrup of buckthorn, antimonial wine, Epsom salts and gruel. However, there is a warning that if the milder remedies are ineffectual the patient should lose no time in consulting a medical practitioner.

Among the lavements for those affected with spasm and females subject to hysteria or 'puerperal convulsions' he recommended one made from tincture of asafoetida, tincture of opium, syrup of buckthorn and warm water.

One of the astringents was made from bruised galls and water from the blacksmith's forge, and another

THE FLEXIBLE CLYSMADUCT.

On Indigestion and Costiveness, 4th edition, 1833, by Edward Jukes.

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was an infusion of bruised oak bark and alum.

The spines scraped from the pods of cowhage[7] mixed with honey and gruel was used as a vermifuge, as was an infusion of tobacco leaves in boiling water. Jukes said that these could safely be administered to children, which is surprising as tobacco enemas were normally considered to be dangerous, and had sometimes proved to be fatal.

In fact he also recommended that the infusion of tobacco be used as an anodyne, but with the warning that administering this herb involved considerable danger, and should only be used under the care of a talented practitioner for problems such as strangulated hernia. Other anodynes were tincture of opium in warm milk, or tincture of opium mixed with extract of hyoscyamus, camphor, gum acacia powder, spirits of wine and warm linseed tea.

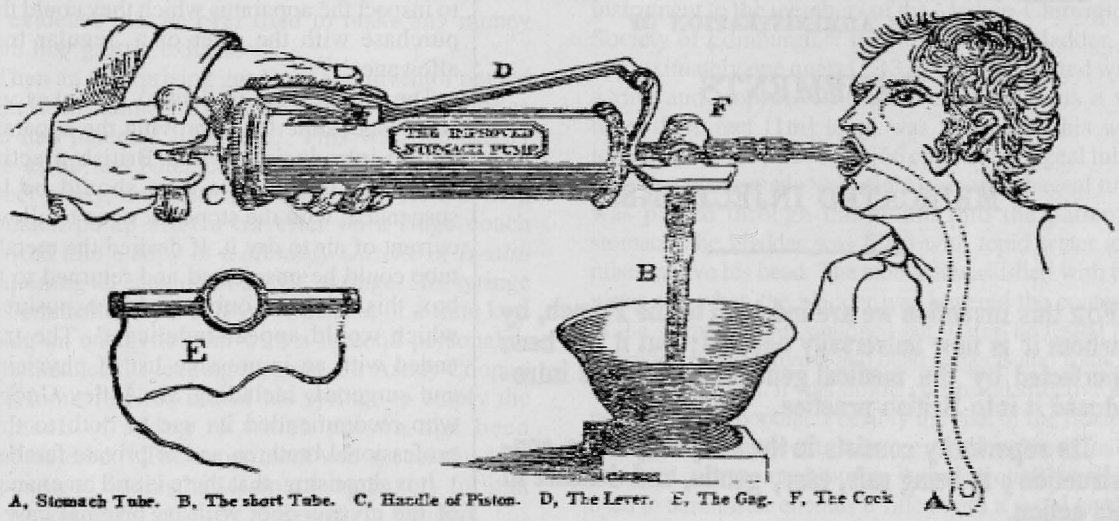
For those with weak stomachs he advised the use of enemata containing bitters such as powdered Peruvian bark or sulphate of quinine mixed with tincture of opium and gruel or tepid water as tonics. However, the opium should be omitted in cases of young children. In cases of suspended animation as in cold (hypothermia) or drowning he advised injecting warm brandy and water as a stimulant, and an infusion prepared from grains of paradise, cubebs, mustard seeds for 'suppression of menstruation.'

As demulcents he used such things as fat mutton broth, starch or pearl barley. For those with stricture of the oesophagus, weak stomachs, ulcerated or malignant sore throat, or fever, he believed that frequent small injections of beef tea, veal broth, calf's feet jelly, milk, sago, isinglass jelly or arrow-root would help to sustain their strength.

The next chapter[8] included nine formulae for injections that could be used to treat 'some diseases of the female organs' including: 'retention or suppression of the monthly indisposition; painful indisposition;' and uterine haemorrhage and prolapse. One interesting enema consisted of camphor dissolved in gin and mixed with water gruel. He believed that:

> all the diseases of females may be most successfully prevented, cured, or alleviated, by attention to the state of the *stomach* and *bowels*, and to diet and regimen.

Probably this is the reason that almost all the treatments given in this section are for enemas rather than douches. Most of them were astringent, for example decoction of oak bark and tincture of catechu, or rose water and white vitriol (zinc sulphate). A stronger formula contained warm water, Labarraque's disinfecting fluid,[9] camphorated



A, Stomach Tube. B, The short Tube. C, Handle of Piston. D, The Lever. E, The Gag. F, The Cock

JUKES' IMPROVED STOMACH PUMP,

frontispiece, *Remarks on the Invention of the Stomach Pump*

by Edward Jukes.

https://doi.org/10.24355/dbbs.084-201802140835

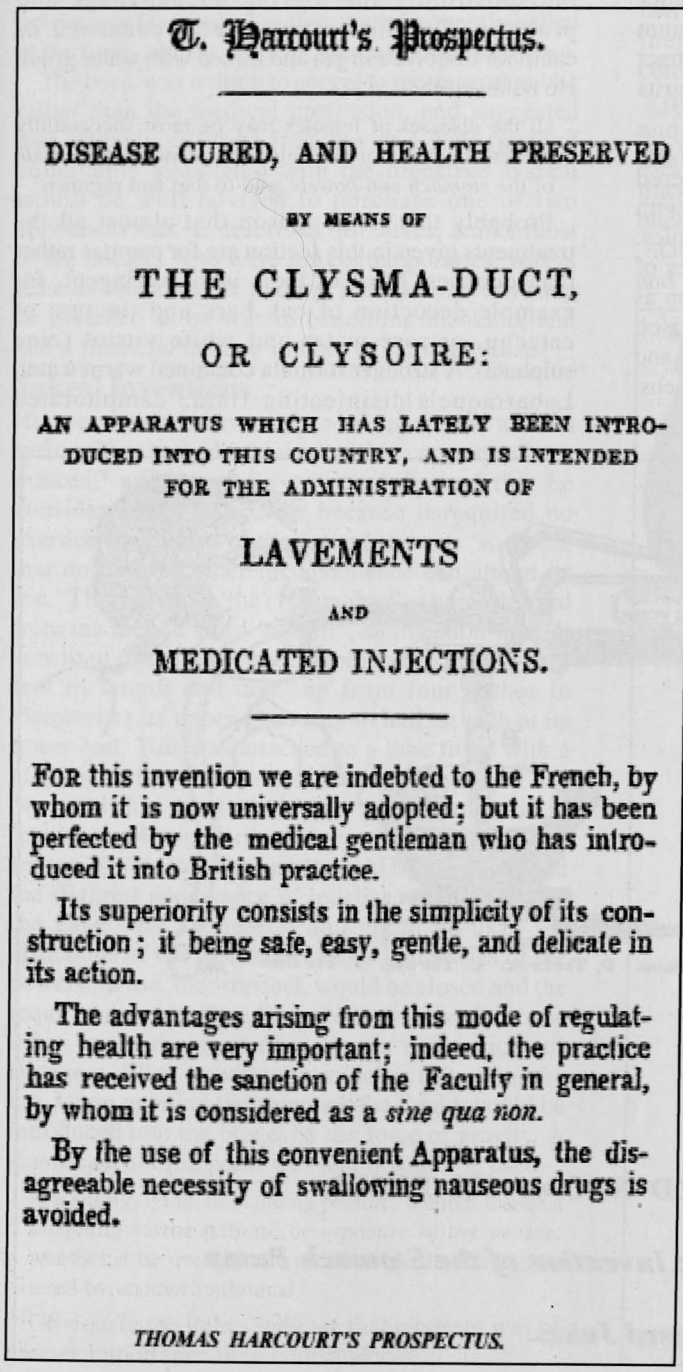
tincture of opium and extract of opium.

Uterine lavements could be employed for 'married females, &c', though there is no clarification of what is meant by '&c'. Possibly this is just a delicate way of referring to women who, though still unmarried, were no longer virgins. One such preparation consisted of warm milk, warm water and spirits of sal volatile.

Thomas Harcourt's prospectus[10]

The clysma-duct or clysoire[11] was manufactured by Thomas Harcourt, who described himself as a truss maker, and could be obtained 'with every description of Apparatus for Injections' from his premises at 12, Carlton Street, Waterloo Place, London.[12]

He issued his prospectus, a tract stressing the importance of this type of medication and the convenience of this particular device, and noted that, due to the fact that the lower bowel had an excellent supply of 'absorbent vessels' it could be used to administer medicines or nourishment. If opium was injected the patient became sleepy, alcohol made him intoxicated, and patients who could not swallow due to a disease of the mouth or throat could be nourished by enemas of 'broth, jellies, wines &c. &c.' He thought that it was particularly useful in cases of costiveness, cholera, colic, gripes, flatulence, strangury, strictures, piles, suppression of urine, diarrhoea, irritation of the bladder or rectum, worms, convulsions (particularly of infants), fevers, nervous affections, inflammations, sluggish or impaired action of the liver, weaknesses, pregnancy, and various female diseases, together with many other maladies.[13] Obviously it would be an imprudent household that did not possess one. An original selling point was that the device was especially useful for those living in a warm climate as it could be used to lower the body temperature, and merchants and captains of ships were invited to inspect the apparatus which they could then purchase with the offer of a 'regular trade allowance'.[14]



T. Harcourt's Prospectus.

DISEASE CURED, AND HEALTH PRESERVED

BY MEANS OF

THE CLYSMA-DUCT,

OR CLYSOIRE:

AN APPARATUS WHICH HAS LATELY BEEN INTRODUCED INTO THIS COUNTRY, AND IS INTENDED FOR THE ADMINISTRATION OF

LAVEMENTS

AND

MEDICATED INJECTIONS.

FOR this invention we are indebted to the French, by whom it is now universally adopted; but it has been perfected by the medical gentleman who has introduced it into British practice.

Its superiority consists in the simplicity of its construction; it being safe, easy, gentle, and delicate in its action.

The advantages arising from this mode of regulating health are very important; indeed, the practice has received the sanction of the Faculty in general, by whom it is considered as a *sine qua non.*

By the use of this convenient Apparatus, the disagreeable necessity of swallowing nauseous drugs is avoided.

THOMAS HARCOURT'S PROSPECTUS.

The public were in debt to Mr Jukes who was responsible for improving the apparatus before introducing it into British practice. After use the clysma-duct should be left suspended, with the stopcock open to allow a current of air to dry it. If desired the metallic tube could be unscrewed and returned to the box, this being the only part 'the exposure of which would appear indelicate'. The tract ended with an impressive list of physicians and surgeons, including Sir Astley Cooper, who recommended its use to both to their professional brethren and to private families.

It is surprising, that there is still an example of the clysma-duct with its original case in existence. It is to be found in the reserve collection of the Science Museum, London.[15] Perhaps it is due to the fact that the process for vulcanising rubber was not discovered until 1839. Unvulcanised rubber lacks elasticity and loses its shape, but does not harden and become brittle as vulcanised rubber does.

The tract is not dated but my copy was bound with Jukes' *On Indigestion and Costiveness,* published in 1833, and an undated copy of his *Remarks on the Invention of the Stomach Pump.* The latter was published by Jukes, and

https://doi.org/10.24355/dbbs.084-201802140835

could be obtained gratuitously from Harcourt's premises in Carlton Street.[16]

The controversy over the invention of the stomach pump

Mr Jukes claimed to have invented the stomach pump and in June 1822 he had published the original account of his syringe in the *Monthly Gazette of Health.*[17] This was a magazine read by the general public rather than the medical profession, so his invention remained virtually unknown to the medical profession. Originally manufactured by Mr Gill, a surgical Instrument maker of Bedford Row,[18] it was later produced by George Maw of 55, Aldermanbury, who took the innovative step of advertising it in the *Lancet.*[19] Later, Mr Jukes adapted his syringe by fitting a flute key lever, that had been demonstrated to him by a Mr. Fuller, to operate the stop-cock.[20] This innovation was widely used by many syringe makers afterwards.

In September 1822 a provincial surgeon, Mr Bush described his 'gastric exhauster' designed to evacuate the contents of the stomach in cases of poisoning. This was published in the *London Medical and Physical Journal*[21] and repeated in the *Medical Intelligencer.*[22] This produced an immediate response from Jukes who accused Bush of piracy. Bush denied the accusation, observing that he knew of no medical men who had heard of Jukes' syringe, and there is no evidence that he ever tried to make any money from his 'gastric exhauster'.

Then an enterprising gardener and inventor named John Read claimed to have invented a poison syringe and had patented it in 1820. This was not strictly true as he had patented it as a garden syringe and insect spray, and had only suggested its use as a stomach pump after a traveller on a stage coach showed him a copy of a *Monthly Gazette of Health* containing an account of Jukes' syringe. His syringe was controlled by a ball valve instead of a flute key. Being an energetic man with a forceful personality he persuaded the leading surgeon, Sir Astley Cooper, to demonstrate the use of his syringe to empty the stomach of a dog to which poison had been administered.[23] The experiment was successful and, encouraged by this he set up a manufactory for it at 30 Newington Causeway, Borough, in London.

Another surgical instrument maker, John Weiss, patented a poison syringe,[24] and as their value in saving lives came to be appreciated intense competition developed to obtain the lion's share in this new market.

An acrimonious debate developed in the pages on the new magazine, the *Lancet,* about the claims to have originated the stomach pump and the relative merits of those that were available.

Eventually Read offered Jukes several hundred pounds to refrain from selling his stomach pump. Jukes accepted this offer, but later came to regret it when he realised how much money Read was making from the sale of his syringe. His bitterness is demonstrated by the following passage about Read from his Tract *Remarks on the Invention of the Stomach Pump:*

> He ought to be contented with the large fortune he has accumulated through his lucky interview with me, and not wish to deprive me of the *merit* of this discovery in medical science, being all that I now possess from the advantages of it, as a remuneration for being so short-sighted as to allow another man to pocket a fortune that must otherwise inevitably have been my own.[25]

Poor Mr Jukes!

Perhaps one should mention that the first person to empty a stomach using a rubber bulb as a syringe was the surgeon Alexander Munro tertius in the 1790s,[26] and the first person to save a life by this method was the American surgeon Phillip Syng Physick in 1811.[27] So, as well as surrendering the opportunity to make a great deal of money from his syringe, Mr Jukes was not entitled to the honour of being the originator of the stomach pump. He could still boast of having introduced the use of gravity-powered syringes into England, but was this claim valid?

Did Jukes introduce the gravity-powered syringe into England?

In August 1824 James Bryce demonstrated a new instrument to the members of the Medico-Chirurgical Society of Edinburgh.[28] It consisted of a bladder, of approximately one quart [1.13 L] capacity, fitted with a ring and stopper. To the lower end of this a tin tube, three feet [1m] long, was fitted and this was joined to a twenty-six-inch [66 cm] oesophageal tube. All joints were made watertight, the oesophageal tube was passed through the mouth into the patient's stomach, the bladder was filled with tepid water and raised above his head. The stomach was filled with the water and when the bladder was lowered the contents of the stomach were siphoned out. Later, he tested his invention on both living and dead subjects and found it to work very well. It was simple cheap and effective but never became popular. Possibly the risk of the bladder tearing was a deterrent to its use. Although originally designed as a stomach pump, it could equally well be used to administer enemas if fitted with a rectal nozzle instead of an oesophageal tube.

A very similar instrument, intended to be used for administering enemas, was devised by the surgeon, James Paty, of Bouverie Street, London and described in the *Lancet* in 1831.[29] He called it a 'Hydraulic Injector', and, again, as it had already been in use for several years by this date, it predated Mr Jukes' Clysma-duct. It consisted of a tank with a capacity of two to three pints [1-1.5 L], below which was a stop-cock connected to a flexible tube that led to a pipe, also fitted with a stop-cock that terminated in an ivory rectal nozzle. Its method of use was similar to that already described for the clysma-duct. This

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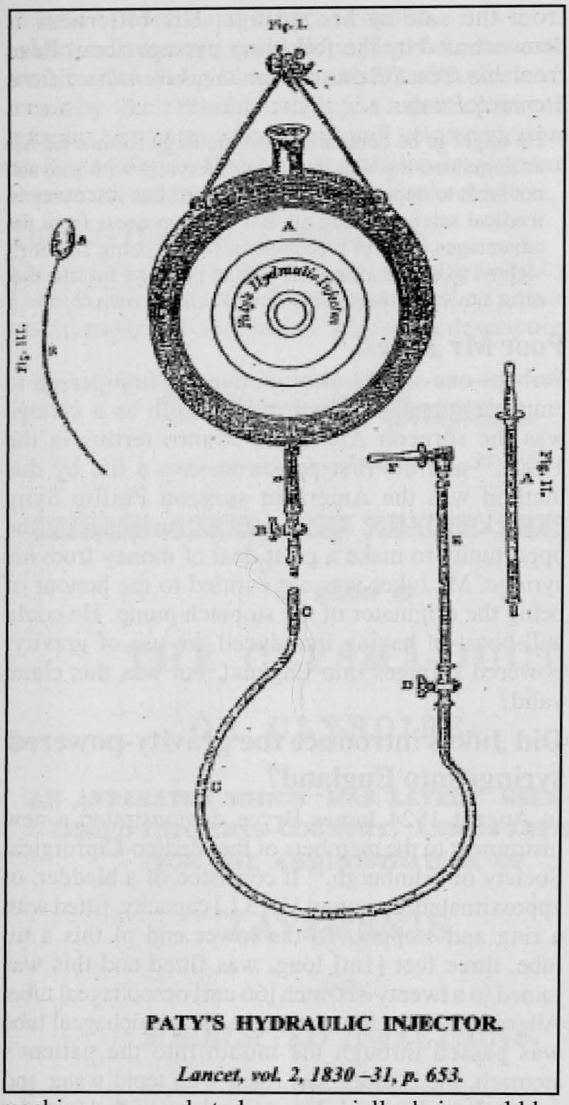

PATY'S HYDRAULIC INJECTOR.

Lancet, vol. 2, 1830–31, p. 653.

machine was marketed commercially, being sold by J Millikin at 301, Strand, and F Day at 37, Poultry, London. I do not know of any examples that have survived to the present day.

Once again Mr Jukes had been anticipated, and it would appear that another surgeon had attempted to make money from an invention without any marked success.

Commercial Issues

It seems likely that surgeons had the intelligence to invent successful appliances, but lacked the necessary commercial skill to exploit them. Other syringes were invented by Fox,[30] Gray,[31] Falconer[32] and Higginson,[33] but in the 1830s and 1840s a long and bitter struggle for supremacy in this field was waged between Read and Weiss. Higginson did not attempt to patent his syringe, which became known abroad as 'The English Syringe', but a number of different manufacturers patented slight variations of his invention and offered them for sale. After Jukes withdrew his syringe, Maw started to market one of his own design, and by the end of the nineteenth century his successors were probably the major supplier of enema syringes in Britain.

Jukes appears to have been a successful surgeon with an enquiring and inventive mind, but he had to rely on surgical instrument makers to make his syringes. They were much more interested in promoting syringes of their own invention than making and selling his, and the industrial revolution saw the introduction of mass manufacturing. Small instrument makers could not compete with the larger firms, and patent regulations were, for the most part, ignored. Read, Weiss, and later Maw's took control of the market for medical syringes and Jukes never really stood a chance. Had he published originally in one of the recognised medical journals he would probably have received the acclaim of his fellow surgeons, even if he made little or no money from his inventions. As it was, he came to be despised by many members of the medical profession while failing to make any substantial monetary gain from his ideas.

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1. Jukes E. *On Indigestion and Costiveness,* 4th edition. London: John Churchill, 1833.
2. Lavement is the French word for enema.
3. Jukes E, Reference 1, pp. 146–148.
4. Ibid., pp. 149–151.
5. Ibid., pp. 150–151.
6. Ibid., pp. 152–167.
7. Fluckiger F A and Hanbury D. *Pharmacographia.* London: Macmillan and Co., 1879, pp. 189–190. Setae Mucunae – irritant spines from the exterior of the pods of *Mucuna pruriens*, also known as *Dolichos pruriens*.
8. Jukes E, Reference 1, pp. 168–178.
9. Beasley H. *The Pocket Formulary,* 11th edition. London: J & A Churchill, 1886, p. 246. Labarraque's Disinfecting Solution, Liquid Chloride or Hypochlorite of Soda was made by dissolving carbonate of soda in distilled water and placing it in a glass vessel. Then a mixture of black oxide of manganese and hydrochloric acid was heated, and the gas evolved (chlorine) passed into the solution. It was stored in a stoppered bottle in a cool, dark place. This preparation was in the *British Pharmacopoeia 1867*, as Liquor Sodae Chloratae, though Labarraque. was not mentioned by name. Later, Liquor Sodae Chlorinatae B P 1885, prepared by a different method using chlorinated lime, was substituted for it.
10. Harcourt T. *Disease Cured, and Health Preserved by means of The Clysma-Duct or Clysoire.* Undated circa 1833. London: printed by William Clowes, Lambeth.
11. Mr Harcourt used the feminine form of the word though it is spelt 'clysoir' in French dictionaries. Is this again intended to indicate that it was particularly suitable for women?
12. The 1846 edition of the *Post Office London Directory* lists his occupation as a surgical instrument maker and gives his address at this time as 30, Hyde Street, Bloomsbury.
13. Harcourt T. Reference10, p. .3.

https://doi.org/10.24355/dbbs.084-201802140835

14. Ibid., p. 4.
15. Museum Reference number A662870 – Harcourt's lavement clysma duct, cased.
16. A slightly different version of this tract, dated 1833, can be found in the Manchester Central Reference Library, ref. no. S&A 359.)
17. *Monthly Gazette of Health* 1822; 78: 177–180.
18. *Monthly Gazette of Health* 1822; 79: 205.
19. *Lancet* 1824; 2: 74.
20. Jukes E. Reference 1, p. 275.
21. *London Medical and Physical Journal* 1822; 48: 218–220.
22. *Medical Intelligencer* 1822; 3: 424.
23. *Lancet* 1824; 1: 275–277.
24. *Lancet* 1825; 6: 346–347.
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1812; 3: 111–113.
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29. *Lancet* 1830-31; 2: 651–653.
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31. *Lancet* 1830-31; 2: 288.
32. *Lancet* 1851; 1: 16–17.
33. *Lancet* 1847; 1: 239–240.

Beauty Secrets of an Edwardian Lady

Sally Pointer* and Andrew Hardy**

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We have a popular image of the Edwardian society lady, dressed in elaborate outfits and poised between the somewhat straightlaced Victorian age and the 'Modern' era. Looking one's best was everything, and the centuries old debate about whether it was quite proper for a lady to use cosmetics was slowly settling in favour of a moderate use of powder and rouge. It is tempting to think that these early modern cosmetics would have been simple preparations, owing little to a chemist's skill, and possibly still retaining many of the dangerous ingredients of earlier cosmetics.

This article draws on original formularies and the recent analysis of a surviving Edwardian face powder to shed light on what exactly was in those pastel-toned powders and how they relate to a wider history of cosmetic use. It also reveals that the Edwardian beauty routine was not quite as simple an affair as might be believed, with far more preparations being used than were ever admitted to.

The end of the nineteenth century had seen both extremes of cosmetic use, from earnest discussions about whether it was sinful to wear a little 'paint' or toilet water to the highly visible powder and rouge favoured by actresses.[1] Many women settled on a compromise that allowed for a little subtle cosmetic enhancement as long as the effect remained one of a natural-looking, unadorned face. However, these trends paled in comparison to the later rapid rise of the cosmetics industry, and subsequent increased use of all forms of cosmetics, in the early twentieth century. Even high-profile figures such as Queen Alexandra used cosmetics in an age when they were still regarded as a little disreputable. The familiar 'Gibson Girl' drawings that appeared in a number of American publications represent the idealized woman of the time.[2] Her waved, pinned-up hair, elaborate blouses and narrow waist embodied the fashionable look of the early years of the twentieth century, and for those that epitomized this look, cosmetic 'enameling' – the use of layers of carefully applied make-up to produce an artificially doll-like maquillage that reflects the Edwardian fashion for a peaches and cream complexion – finished the look.[3] Publications of the day regularly refer to make-up as a necessary complement to a woman's beauty, though always with the caution not to overdo it. No matter what popular opinion might be on the use of cosmetics, for many women the importance of appearing lovely at a time when their chief hope of a comfortable future was to secure a good marriage excused completely a remarkable amount of cosmetic enhancement.

Towards the end of the Victorian period obtaining brand-name cosmetics had become a surreptitious affair. Whilst chemists openly displayed a wide range of toilet waters or beautifying soaps, the powders and rouges that accompanied them were rarely laid out for browsing, and it was more normal to ask discreetly for such items. Other chemists would make up powder and cosmetics to their clients' specifications, and this led to a wide range of qualities and textures to suit all tastes and purses. Department stores appeared in many large cities during the Edwardian period, and a feature of these, such as Selfridges, which opened in 1909, was the beautifully displayed range of perfumes and cosmetics. This reinforced the growing confidence in openly buying such items; although for those still a little cautious about being seen purchasing cosmetics publicly, there was the option of mail order.

Surviving catalogues on both sides of the Atlantic from the first two decades of the twentieth century show an impressive range of 'toilet requisites', from the familiar lavender toilet waters to cold creams, wrinkle reducing 'massage creams' and talcum powders in a remarkable range of scents and shades. Also appearing in this period are peroxide vanishing creams, which aimed to bleach the complexion, scented Vaseline[4] (to be used to smooth the eyebrows as well as having various first aid uses),[5] and

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deodorant creams under the still familiar brand name of 'Mum'.[6] Face powders in shades of white, flesh, rose, brunette or cream were also offered in heavily scented forms, or for those that preferred a more subtle approach rice powder was sold in packets. Rouge was often just described as 'light' or 'dark' in tone, though shade numbers in some catalogues hint at the vast range of tones that were available. At this stage eyebrow pencils started to appear on open sale. When these were not available the end of a burnt match was often used to darken the eyebrows; this method reappearing during the Second World War when eye cosmetics were hard to find. A form of stick make-up was usually just referred to as 'cosmetic' in the catalogues; they were available in black, brown and white shades and had textures not dissimilar to (theatrical) greasepaint. Lipstick as such had yet to make an appearance, so pomades for the lips provided a tint whilst also soothing to the skin.[7]

Theatrical make-up often contained the most damaging ingredients. The following formula for pink theatrical greasepaint is a not atypical example:[8]

Zinc carbonate[9]	250 parts,
Bismuth subnitrate[10]	250 parts,
Asbestos[11]	250 parts,
Expressed oil of almonds	100 parts,
Camphor	55 parts,
Oil of peppermint	55 part,
Perfume	25 parts,
Eosine	1 part.

In this example the Asbestos has significant health hazards associated with its use, and Bismuth Subnitrate can be toxic if ingested in large (i.e. tens of grams) doses.

A recipe for a home-made nail tint, from a book first published in 1890, suggests rubbing

> the nails with equal parts of cinnabar and emery, and then with the oil of bitter almonds. The chamois or polisher may then be applied to each nail separately until a fine polish is obtained; but it must be remembered that too high a polish is considered vulgar.[12]

The cinnabar residue on the nails presented the possibility of ingestion by mouth as well as inhalation of the dust, and long term use of this cosmetic treatment could lead to distressing symptoms.[13]

Some of the risks associated with cosmetic usage were well understood, and many discussions of the relative virtues of 'paint' referred to the problems of heavy-metal-based ingredients (that is compounds of metals with a density of >5 g/cm^3; e.g. lead, mercury, arsenic and bismuth) and specifically to their damaging the skin. Given the now known problems with vermilion (cinnabar), carmine (a pigment extracted from cochineal beetles) was considered the safest rouge if it could be bought in an unadulterated form. In 1889 a book entitled *Beauty and How to Keep It*,[14] recommended never starting to use paint if it could possibly be helped. It stated that if rouge was essential the best way to apply it would be to apply a little cold cream to the cheek, followed by a dusting of carmine powder, then rubbing off the mixture with cotton wool after a few minutes. There is some logic behind these directions, for as well as ensuring that the look would not be spoilt by excess powder sticking unevenly to dry or oily parts of the skin, the fat basis of the cold cream offered a little protection against harmful ingredients in cosmetics applied over it by acting as a simple barrier cream. Lead for example is widely believed to cross a fat barrier into the bloodstream with more difficulty than it does when applied direct to the skin.[15] If the carmine rouge used was pure, then the deep dye would quickly stain the skin; but its application over cold cream, which was then rubbed off, would have given at least a little control over the final effect.

The powder compacts that started to make an appearance at the turn of the century often contained a small compartment for rouge as loose powder. Even when the powders intended for use in these compacts were based on relatively harmless ingredients, they were not always as innocuous as they appeared. Rice starch for example tended to bond with the natural oil in the skin and so clogged the pores badly in some areas of application and flaking off in others. Many of these powders absorbed moisture rapidly and this also could lead to enlarged pores and a patchy finish. 'Pearl powder' was popular, but rarely made with pearls and more likely contained a bismuth compound, which was potentially toxic. Also, some of these heavy-metal-based preparations had a distressing habit of turning black when exposed to sulphur (forming the black insoluble metal sulphides) from the ubiquitous coal fires of the period.[16]

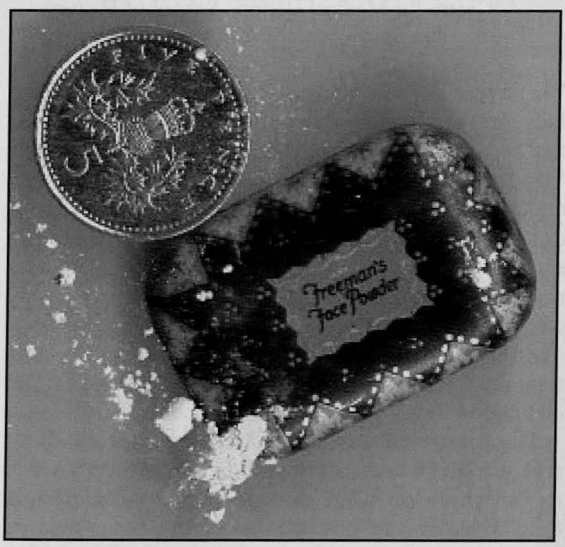

Figure 1. Freeman's Face Powder

We were fortunate to be able to obtain and analyse a *Freeman's* face powder sample in a tin dated to around 1903 or 1904, and which still contained its

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original ingredients (Figure.1). The face powder inside has a very pale mauve-pink tone to its otherwise flesh tint, which brings to mind comments made in the 1880s by the artist John Singer Sargent about his famous portrait *Madame X*.[17] The skin tones in his portrait are not just shadowed in violet for artistic effect, but as Sargent records in a letter to a friend:

> Do you object to people who are fardées [people who use make up] to the extent of being a uniform lavender or blotting-paper color all over? If so, you would not care for my sitter; but she has the most beautiful lines, and if the lavender or chlorate-of-potash-lozenge color be pretty in itself I should be more than pleased'[18]

The shade also confirms that the delicate colours favoured in costume are also being reflected in the cosmetics.

The American-made Edwardian-dated face powder was chemically studied using the analytical techniques of LV SEM (Low Vacuum Scanning Electron Microscopy) and XRPD (X-Ray Powder Diffraction). The former gave quantitative elemental analysis on the sample for atomic numbers (Z) of 5 or above, and the latter gave semi-quantitative results for the (crystalline) compounds present in the sample. For readers wishing to know more about these two analytical techniques, as applied to cosmetic samples, then we refer them to a recent publication by one of us.[19] The LV SEM results were (in decreasing order of weight percent and with those elements in brackets being at the 1% or below level each): O, C, Zn, Si, Al, Mg (Mo and/or S, Ca, Fe, K). The XRPD results were (with approximate percentages in brackets):

Zincite (ZnO) (50);
Four Silicates (45)
[Talc (16), Kaolinite (13), Pyrophyllite (11) and Muscovite (5)];
Quartz (SiO_2) (2);
Calcite ($CaCO_3$) (1);
Hematite (Fe_2O_3) (1) and
Aragonite ($CaCO_3$) (1).

The light pink colour of the face powder is from the presence of the Hematite, though in reality a few percent of calamine was probably added (calamine here assumed to be a mixture of Zincite and Quartz, mixed with a small amount of Hematite to give the colour). The light 'shine' of the powder arises from the presence of the Aragonite (the main component in mother-of-pearl) and possibly from some of the Silicates. None of the compounds found in our Edwardian face cosmetic are likely to give rise to toxicity, especially when used externally and in small amounts. In fact the main component, Zincite, is a mild antiseptic used in modern-day skin ointments and lotions and has also been found in some of the eye cosmetics still used in the present-day Middle East[20].

Conclusions

In this short article we have outlined the range of cosmetics, and some of their contents, used during the Edwardian period on both sides of the Atlantic. Brand-name or home-made, some at least of these cosmetics would **not** be permitted now because of their known toxicity, although there is sometimes difficulty in unambiguously identifying the exact chemical compound(s) listed in some of the recipes. However, things were improving and many of the toxic heavy-metal-based cosmetics were being superseded by much safer compounds. Thus talc or rice powder, tinged with a small amount of colourant such as carmine or calamine, were replacing red lead or vermilion. Our analysis of one original sample of an Edwardian face powder supports the above, as **no** heavy-metal compounds were found. We are currently studying more (face) cosmetics from this period and hope to publish the results in a longer, and more technically detailed, paper at a later date.

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Endnotes and References

1. For example, Max Factor opened his first make-up shop in 1897 catering specifically to the theatrical trade then developed cosmetics first for the movie industry and only from 1927 onwards for the general public.
2. *The Gibson Girl,* EyeWitness to History, www.eyewitnesstohistory.com (2001).
3. British actress Lily Langtry (1853-1929) frequently appeared in advertisements for beauty products, as did many other actresses of the period.
4. *Eaton's Spring and Summer Catalogue*. Canada, 1908: 319.
5. Vaseline petroleum jelly was first patented in 1878. Originally sold as a first aid remedy for cuts and grazes, it rapidly became popular as a cosmetic aid as well as being used as a basis for ointments.
6. *Eaton's Fall and Winter Catalogue.* Canada, 1918-19: 298.
7. 'Roger and Gallet's Rose Pomade for the lips, 20c' offered in Carsley (S.) Co Limited Spring and Summer 1902 catalogue: 107.
8. Henley NW. *Henley's Twentieth Century Book of Formulas, Processes and Trade Secrets*. New York, 1912: 229.
9. Zinc carbonate ($ZnCO_3$) is a white powder still widely used in a number of medical applications. Current safety data sheets highlight that it can be irritating to eyes and skin, though like most of these ingredients in this recipe the risk was probably higher for the manufacturer than for the user.

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10. This is one of the several forms of 'Bismuth subnitrate' used in early 20th century cosmetics. Only one is described as a potential irritant and strong oxidising agent in current Product Identification sheets [$4BiNO_3(OH)_2$. $BiO(OH)$].
11. Asbestos can mean any of six or more related minerals including: chrysotile, amosite, crocidolite, anthophyllite, tremolite and actinolite. All have known health risks associated with their handling and use, with the main risks occurring primarily through inhalation of fibrous dust (which can lead to chronic pulmonary fibrosis, *asbestosis*, and in extreme cases to lung cancer).
12. *Beauty: Its Attainment And Preservation.* New York: The Butterick Publishing Company,1890; Chapter xxvi: 321.
13. Cinnabar is a naturally occurring mineral, mercuric sulfide (HgS), also referred to in many cosmetic contexts as vermilion. Long-term exposure symptoms may include nausea, frequent headaches, tiredness and chronic diarrhea, with the possibility of the kidneys being affected in extreme cases.
14. *Beauty and how to keep it. By a Professional Beauty*. London: Brentano's, 1889.
15. A recent study into the absorption of lead from a medicinal ointment supports this otherwise traditional view. Gorter et al. Cutaneous Resorption of Lead after External Use of Lead-Containing Ointments in Volunteers with Healthy Skin. *American Journal of Therapeutics* 2005; 12(1, January/February): 17-21.
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19. Hardy et al. Composition of eye cosmetics (kohls) used in Cairo. *International Journal of Environmental Health Research* 2004; 14(1, Feb): 83-91.
20. Hardy et al. A study of the composition of the eye cosmetics (kohls) used in the United Arab Emirates. *Journal of Ethnopharmacology* 2002; 80: 137-145.

An historical review of the legislation regulating pharmaceutical reimbursement in the healthcare system in Bulgaria

Jeny Antonova PhD, Prof. Zlatka Dimitrova

Introduction

This research into the legislation regulating pharmaceutical reimbursement in the healthcare system includes all published regulatory documents from recent Bulgarian history. It spans a period of almost 120 years (1879-2000). The starting point was the liberation of Bulgaria from the 500-year yoke of the Ottomans in 1878. In the same year the first law regulating healthcare was passed.[1] In the whole period under study there were about 18 regulatory documents relating to the reimbursement system. They are compared and contrasted under the following headings: population range; pharmaceutical nomenclature range; reimbursement level; pharmacies involved in the scheme; and sources of funding. In order to evaluate the reimbursement system over time archival materials, books and specialised periodicals were reviewed.

Results and discussion

The period under review comprised several phases of social development which were radically different from a political and economic perspective. As a result, the legislation associated with pharmaceutical reimbursement in the healthcare system has been frequently and exceptionally diverse.

The Table (p. 31) offers a summary of the indicators contrasted in the study.

The population range is related to diseases specified n a list,[2,3,5,7,8,9,11,12,13,14,15] for which treatment with free of charge or partially reimbursed medicines is envisaged. Parallel to that, some regulations include various social groups: those in the lowest income bracket;[1,3,5,10] employees from various administrative departents;[2,3,5,9] soldiers;[5,9,14] all insured through insurance funds;[4,6,18] pregant women; mothers with children up to the age of one;[11] all children until a certain age;[11,14,15] and the handicapped.[11]

The pharmaceutical nomenclature range is also diverse in nature and quantity. In the first regulations the coverage was not restricted in any way,[1,2,3] but at that time it was not extensive either. The Social Insurance Law of 1924[4] restrictively defined the pharmaceutical preparations in terms of type, form and quantity, but after 1944[9,10,11,12] these restrictions were repealed. They were re-introduced in the last decades (1993)[13,14,18] and are still in force at present.

Gradually different levels of reimbursement were introduced. By virtue of the Social Insurance Law of 1924[4] they were limited in accordance with income; later a percentage method of reimbursement was adopted.[9,10,11,12,13,14] The latest regulations introduced a limit-bound method[12,13,15] which demonstrates its advantages especially in the case of a tight budget.

The pharmacies involved in this scheme over the period of time studied are different: municipal, hospital-affiliated, private and state.

The sources of funding are also varied: the state and the municipal budget or the insurance fund.

Of special interest in the period under study is the Social Insurance Law of 1924[4]. It introduced health insurance and fund support for healthcare. It regulated the rights and the responsibilities of all participants in the system. Its main disadvantage was that it did not encompass the entire population and in particular people in the lower income bracket. They were provided for by other regulations which envisaged various kinds of healthcare services for them, including prophylactic services.

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Year (reference)	Population range		Pharmaceutical preparations	Reimbursement level	Pharmacies	Sources of funding
	Social groups	Diseases				
1879 (1)	lowest income	--	unrestricted	depend on municipality	municipal	municipal budget
1903 (2) 1909 (3)	officials	infectious diseases	unrestricted	indeterminate	hospital	municipal state budget
1924 (4)	all insured	unrestricted	restricted	depend on income	all	insurance fund
1929 (5) 1930 (6)	different social groups	restricted	unrestricted	indeterminate	hospital	municipal state budget donations
1934 (7) 1935 (8)	all insured	unrestricted	restricted	depend on income	all	insurance fund
1961 (9) 1962 (10)	--	5-9 diseases groups	unrestricted	100%	hospital	state
1983 (11)	different social groups	40 diseases	Unrestricted	100% 75%	state	state
1993 (12)	lowest income	--	unrestricted	100% 50%	state private	Ministry of Social Welfare
1993 (13)	--	114 diseases	restricted	100% 75% 50% 25%	state private	municipal budget
1995 (14) 1997 (15)	children up to 4	107 diseases	restricted	100% 50% limit for children	municipal private	municipal state budget
1997 (16)	only veterans	unrestricted	unrestricted	75%	municipal private	municipal budget
2000 (17, 18)	all insured	restricted	restricted	limits	contract with insurance fund	State budget Insurance fund

Table 1. Indicators contrasted in the study

Conclusion

The chronological review of the various legislative documents concerning pharmaceutical reimbursement in the healthcare system revealed a gradual raising of the criteria. The detected variance in the social categories of patients, the range of diseases and the pharmaceutical preparations included directly depended on the pursued social, healthcare and pharmaceutical policies of the respective period.

Experience-proven benefits for the development of pharmaceutical reimbursement in the healthcare system include the introduction of restricted pharmaceutical preparations, the regulation of different levels of reimbursement and the orientation to certain healthcare priorities.

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14. Decree 46/ 1995. *State Gazette* 100/1995: 2-14
15. Decree 12/ 1997. *State Gazette* 76/1997: 2-15
16. Decree 7/ 1997. *State Gazette* 33/1997: 17-18
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From Pills to Philanthropy: The Thomas Holloway Story

Stuart Anderson

Thomas Holloway was one of several Victorian entrepreneurs who made vast fortunes through the manufacture and mass advertising of patent medicines. What set him apart from many of the others was that he chose to devote much of his fortune to philanthropic activities during his own lifetime. Holloway and his wife had no children to whom they could leave either the fortune or the business, and so he devoted the latter part of his life to two great projects, an educational establishment for ladies, and a sanatorium for the middle classes.

Holloway was born on 22 September 1800, the eldest of the six children of Thomas Holloway senior and his wife Mary Chellow. At the time of Thomas's birth his parents were running a bakery and several inns in Plymouth Dock (now Devonport). Little is known about Thomas's early years, although he received his early education in Camborne. By 1811 the family had moved again, this time to run the Turks Head Inn in Penzance.[1] Here they stayed for the next fifteen years.

The young Thomas was assigned to a private tutor, John Spasshat, who accepted pupils at his home in East Street. Spasshat was a member of a well-known local Baptist family. Despite the Holloways being strict Church of England, Thomas remained under his tutelage until the age of sixteen. In 1816 the family opened a grocers and bakery in the town, and Thomas and his brother got their first experience of retail trade.

It seems likely that Thomas began an apprenticeship as a chemist and druggist, with William Harvey, who had a shop a few doors away (possibly 1816-1820).[2] Any employment he may have had as a druggist's assistant was short-lived, for by the early 1820s he was fully aware of the limited prospects available to him in Cornwall. He left Penzance about 1828 to seek his fortune, around the time his family moved again, this time to Bermondsey, London.

Thomas then spent some three years in Roubaix, France, a small cloth-making town near Lille, and also some time in Dunkirk. During this time he acquired a good grasp of the language. On his return to England he took up a post as secretary and interpreter for a firm of importers and exporters in London. Thomas senior died in 1836, and this made it possible for the young Thomas to set up in business on his own as merchant and foreign correspondent.

In 1837 he was approached by an Italian trader by the name of Felix Albinolo. The latter was the proprietor of *'Albinolo's or the St Come and St Damian Ointment'*. Albinolo used part of an unauthorized testimonial in his advertising, and was threatened with legal action. He was unable to meet his liabilities and ended up in a debtors' prison.

The Old Market House, Penzance 1836. Before 1830 the Holloways' grocery and bakery shop would have been in this building, probably to the right of the cart, facing down Market Jew Street. From the Author's collection.

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An advertisement for Holloway's Pills which appeared in the Railway Guide, 1890. From Graham Dennis' collection.

Holloway saw an opportunity to produce and market his own ointment. His first batch was made using his mother's saucepan, later using other domestic equipment that could hold up to forty pounds in weight. On 19 August 1837 he obtained a testimonial for his product from Herbert Mayo, senior surgeon at the Middlesex Hospital, and on 15 October that year placed his first newspaper advertisement for the sale of Holloway's patent preparation.

A further advertisement appeared in the periodical *Town* on 16 June 1838. But the business was slow to take off at first. He later recalled that in one week he spent the sum of one hundred pounds on advertising, but that all he sold was two small pots of ointment. At one stage he overreached himself in advertising, finding himself unable to pay many of the newspaper and periodical proprietors with whom he had contracts. As a result he spent several weeks in the Whitecross debtors' prison.

In 1839 he started to manufacture pills to try and improve profits. Later that year he moved to new premises at 244 Strand, under the title 'Mr Thomas Holloway, patent medicine warehouse'. He began visiting the docks around Rotherhithe to bring his products to the attention of ships' captains and their passengers. In 1840 he married Jane Pearce Driver, the elder daughter of a Rotherhithe shipwright.[3]

His business began to expand rapidly, and his financial pressures eased. This was helped by an inheritance from his mother who died in 1843. On 6 May 1845 he opened an account with Coutts Bank, with whom he stayed for the rest of his life.

Holloway possessed all the essential characteristics required of a successful Victorian entrepreneur. He demonstrated great initiative and perseverance, with a shrewd business mind which from the beginning grasped the value of large-scale advertising. In 1838, his first full year, he spent £1,000 on inserts in newspapers and periodicals, and for posters at places of entertainment. By 1842 this had risen to £5,000, by 1845 to £10,000, and by 1855 to £30,000. Expenditure reached £40,000 in 1864 and £45,000 in 1882, and by 1883 (the year of his death) £50,000.[4] This gave a return of an equal sum as clear profit.

In his advertisements he made full use of testimonials. In one he listed twenty of the greatest medical men of the day who had either used Holloway's Ointment or recommended it in their private practice. As he expanded his adverts sought to appeal to all classes, in most parts of the world, and in a multitude of languages, including Arabic, Chinese, Turkish and Sanskrit. He used a wide range of other ploys to bring his products to the attention of the public. These included ballad song-sheets and *Holloway's Almanac and Family Friend,* which contained a wide range of articles including adventure stories, sports and nature.

In 1857 he issued two tokens (or tradesmen's tickets) advertising his pills and ointments. One was the size of a penny, the other a halfpenny, and although they carried no promise of repayment they were undoubtedly used as money. They showed a bust of Holloway, with the legend 'Professor Holloway, London' on one side, and the figure of hygeia, seated between two pedestals, on the other.[5]

As the business grew Holloway found it necessary to find larger premises and take on extra staff. Initially two houses were erected at the rear of 224 Strand. In 1867 he had to move again, since the Strand building was to be demolished to make way for the new Royal Courts of Justice. He acquired new and more spacious premises at 533 New Oxford Street. There the

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Thomas Holloway

company stayed until 1910, when it move to 113 Southwark Street.

In 1851 he employed five clerks, twelve men, nine boys and three women. By 1877 he was employing twenty-three clerks, twelve porters, and thirty-six girls. By the time of his death in 1883 there were over one hundred workers employed in the factory and warehouse, together with dozens of travelers, agents and delivery men responsible for promoting his products.

In 1912 the pills were analysed by the British Medical Association, and they were included in *More Secret Remedies*.[6] They were found to be a preparation of aloes, powdered ginger and soap (essentially the same ingredients as *Beechams Pills*). A box of forty-nine pills cost 1s 1½d. The advertisement claimed that 'they have positively no equal for thoroughly cleansing the system and putting the liver and kidneys in functional order, without pain or griping'. The recommended dose varied from two pills a day to seven pills night and morning, according the complaint being treated. The complaints for which the 'Hollowayian System of Medicine' was recommended included gout, rheumatism, constipation, stone, venereal diseases, flu, and 'youthful indiscretion'.

Over the years at least six different pots were used for the ointment, and variations also occurred in the list of complaints for which this could be used.[7] In addition to the pots, transfer printed lids were used on the larger sizes.

Holloway was both energetic and ruthless in pursuit

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of his business. Although in later years he delegated responsibility for the sale of his products to others, in the early years he sought out and appointed agents himself. In 1848 he and his wife undertook a grand tour to set up agencies and arrange the insertion of advertisements. Travelling by train and coach they visited over fifty European towns and cities in less than five months. In 1851 he visited America, but he decided not to pursue that market; and in May 1853 he undertook an even more ambitious tour of European towns.

Despite his great success Thomas began to look at other ways of adding to his fortune. He became a shrewd and daring speculator in stocks and shares. He started to buy fine paintings, although this was done purely as an investment rather than for any aesthetic merit they had; he was no connoisseur of art. And from the 1860s onwards he developed a keen interest in property. He owned Elm House at Winkfield near Windsor. He later purchased Tittenhurst Park in Sunninghill, along with forty acres of adjoining land, and another country house close by, Broomfield. He later acquired the Whitbourne estate, and also owned property in Cornwall.

As his income and possessions grew Thomas had the problem of what to do with it all. He and his wife had no children to whom they could leave their estates. His first thought was to give a large donation to his native town, Devonport. The offer was rejected by the corporation. In 1864 he sought suggestions from a wide range of sources, including a notice in a magazine and his solicitor. He eventually decided to fulfill his philanthropic ambitions in his own lifetime rather than wait until after his death. His chosen cause, largely on the advice of the social reformer Lord Shaftesbury, was 'to make generous and dignified provision for the treatment of mental illness among the less prosperous middle classes'.[8]

In 1871 a competition was held to find an architect who could do justice to Holloway's vision for his new sanatorium. It was won by a neo-gothic design by William Henry Crossland, who had been a pupil of Sir George Gilbert Scott. Holloway himself took almost the entire responsibility for its planning. He insisted that the building should be spacious, comfortable and welcoming, and that each patient should have their own room. The first brick was laid by Mrs Holloway in May 1872. To avoid unnecessary delay Thomas bought the brickworks. Despite this progress was slow, and Thomas visited the site almost daily in 1877, and he died before it opened.[9]

Holloway had included plans in his will for the establishment of a convalescent home. But having got the sanatorium under way he was keen to progress his second philanthropic project. In June 1873 he had a meeting with the Prime Minister, Gladstone and his wife. A short while later Holloway had changed his mind about the hospital for convalescents, and began to formulate plans for an even more ambitious project, a college for the education of women.[10]

Crossland was again appointed architect for the project. It was he who suggested to Holloway that it should be modeled on the famous renaissance chateau of Chambord in Loir-et-Cher, France. Together theyvisited Chambord, measuring every room and making countless sketches. In 1874 he acquired the Mount Lee estate in Egham, Surrey, conveying it to the trustees in May 1876. But it was not until 14 September 1879 that the first brick was laid, this time by George Martin, his agent and brother in law. Holloway himself spent much time sounding out educationists and others who might act as advisers and sit on committees. He was anxious that clergymen, doctors and lawyers should be excluded from the governing body.[11]

Thomas himself died at Tittenhurst, Surrey, of congestion of the lungs on 26 December 1883. In his third and final will he left his remaining fortune and the business to his wife's sister, Mary Ann Driver. She subsequently transferred it to Henry Driver and George Martin, who continued to run the business.[12] It remained in family hands until 1930, when Holloway's Pills Ltd was taken over by Beechams. Holloway's Pills survived until the 1950s, and the name remains dormant even today.

Many of the pictures and furniture to be used by the college had been conveyed to the trustees in 1881 before Holloway's' death. A complete catalogue of the paintings held by the Royal Holloway College has subsequently been prepared.[13] He had executed the Deed of Foundation on 11 October 1883, and the building of the college was completed a few weeks later. It was formally opened by Queen Victoria amidst much publicity on 30 June 1886.

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Records

The National Archives have reported the following major accessions to Repositories in **2003** relating to Pharmacy and Chemistry.

The National Archives: Historical Manuscripts Commission (TNA:HMC), in its annual Accessions to Repositories exercise, collects information from over two hundred record repositories throughout the British Isles about manuscript accessions received in the previous twelve months. The information is then edited and used to produce a number of thematic digests which are distributed for publication in a number of learned journals and newsletters as well as being made available in full on TNA's website (www.nationalarchives.gov.uk).

The information is also added to the indexes of the National Register of Archives (NRA), the central point for collecting and disseminating information about the location of manuscript sources relating to British history outside the public records. The NRA, which currently contains over 44,000 lists and catalogues of archives, can be consulted at the Nationa Archives, Kew, Richmond, TW9 4DU. Alternatively, searchers may access the indexes to the NRA and certain linked on-line catalogues via the website. Limited and specific enquiries can be dealt with by post, or email (enquiry@nationalarchives.gov.uk).

Readers should note that dates for records in this digest are given when known, but that these are covering dates which do not necessarily indicate the presence of records for all intervening years. Records have been included in the digest regardless of whether the deposit has yet been fully catalogued, and readers are advised to check with the relevant depository as to whether this, or any other factors, may prohibit access to the documents.

Cheshire and Chester Archives and Local Studies, Duke Street, Chester, CH1 1RL: Herbert Levinstein, director of Murgatroyd's Salt & Chemical Co Ltd, Elworth: files and papers 1939-50 (DMU)

Derbyshire Record Office, New Street, Matlock, Derbyshire, DE4 3AG: Derby dispensary: leech accounts 1819-24 (D6132/6)

Gwent Record Office, County Hall, Cwmbran, Monmouthshire, NP44 2XH: Dix Chemists, Pontypool: prescription and cash books and bills 1878-1915

Lancashire Record Office, Bow Lane, Preston, Lancashire, PR1 2RE: The Foxton Dispensary, Blackpool: records incl. legal papers 1878-1970 (DDX 2421 acc 9511)

Lincolnshire Archives, St Rumbold Street, Lincoln, LN4 1NL: Kent & Elmitt, chemists, Lincoln: prescription records 1926-27 (Misc Don 1201)

Norfolk Record Office, The Archive Centre, Martineau Lane, Norwich, Norfolk, NR1 2DQ: Allen & Neale (Chemists) Ltd, King's Lynn: prescription books late 19th cent-1955 (ACC 2003/ 81)

Suffolk Record Office, Bury St Edmunds Branch, Raingate Street, Bury St Edmunds, Suffolk, IP33 2AR: Bush, Boake, Allen (formerly Allen, Stafford & Sons Ltd), drug millers and manufacturing chemists, Long Melford: records 1883-2002 (HC 568)

Wandsworth Local History Service Library, Battersea Library, 265 Lavender Hill, London, SW11 1JB: Boots Co Ltd, pharmaceuticals manufacturers and retailers, Putney: Prescription books and poisons registers c1908-80

Hopkin & Williams Ltd, manufacturing chemists, Wandsworth: records rel to working costs and analytical tests c1931

West Yorkshire Archive Service, Kirklees Central Library, Princess Alexandra Walk, Huddersfield, West Yorkshire, HD1 2SU: Holliday Dyes and Chemicals Ltd, Huddersfield: process and employee records, corresp and plans 19th-20th cent

Wellcome Library for the History and Understanding of Medicine, Archives and Manuscripts Section, 183 Euston Road, London, NW1 2BE: Michael Rand, professor, pharmacologist: corresp, mainly with Prof JH Burn, concerning noradrenergic transmission 1957-77 (MS.8044)

GlaxoSmithKline, pharmaceutical manufacturers (addnl): records, incl minutes, images and records of Coopers McDougal & Robertson, veterinary subsidiary company c1860-1992 (WF 350)

Wellcome Foundation, Beckenham Photographic Library: negatives of people, places and projects funded by the Foundation, and photomicroscopy negatives c1945-92 (WF/M/1)

Glasgow University Archive Services, 13 Thurso Street, Glasgow, Lanarkshire, G11 6PE, Scotland: McGeachy & Macfarlane, manufacturing chemists, Glasgow: business corresp 1853-95 (Accn 2422).

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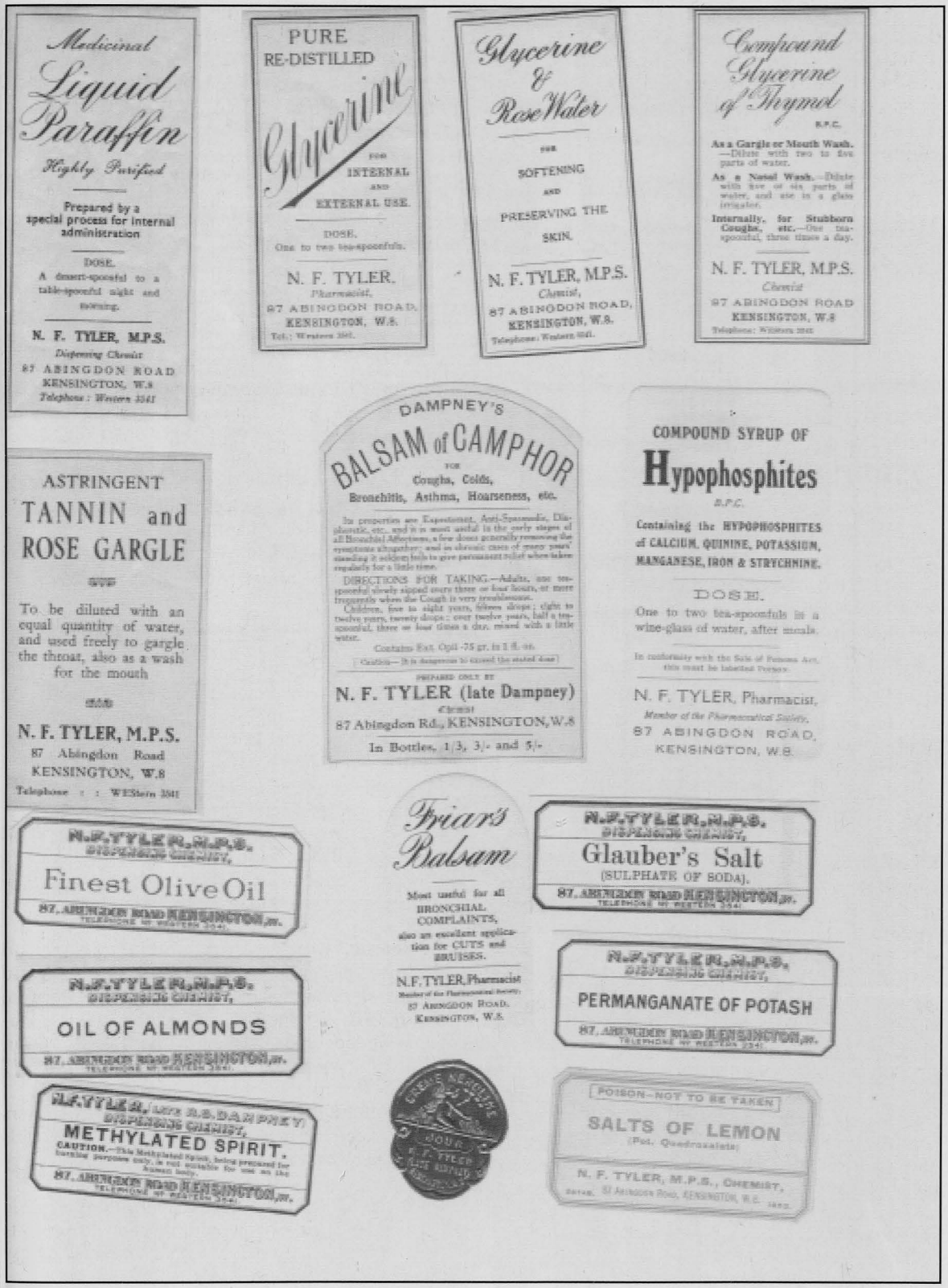

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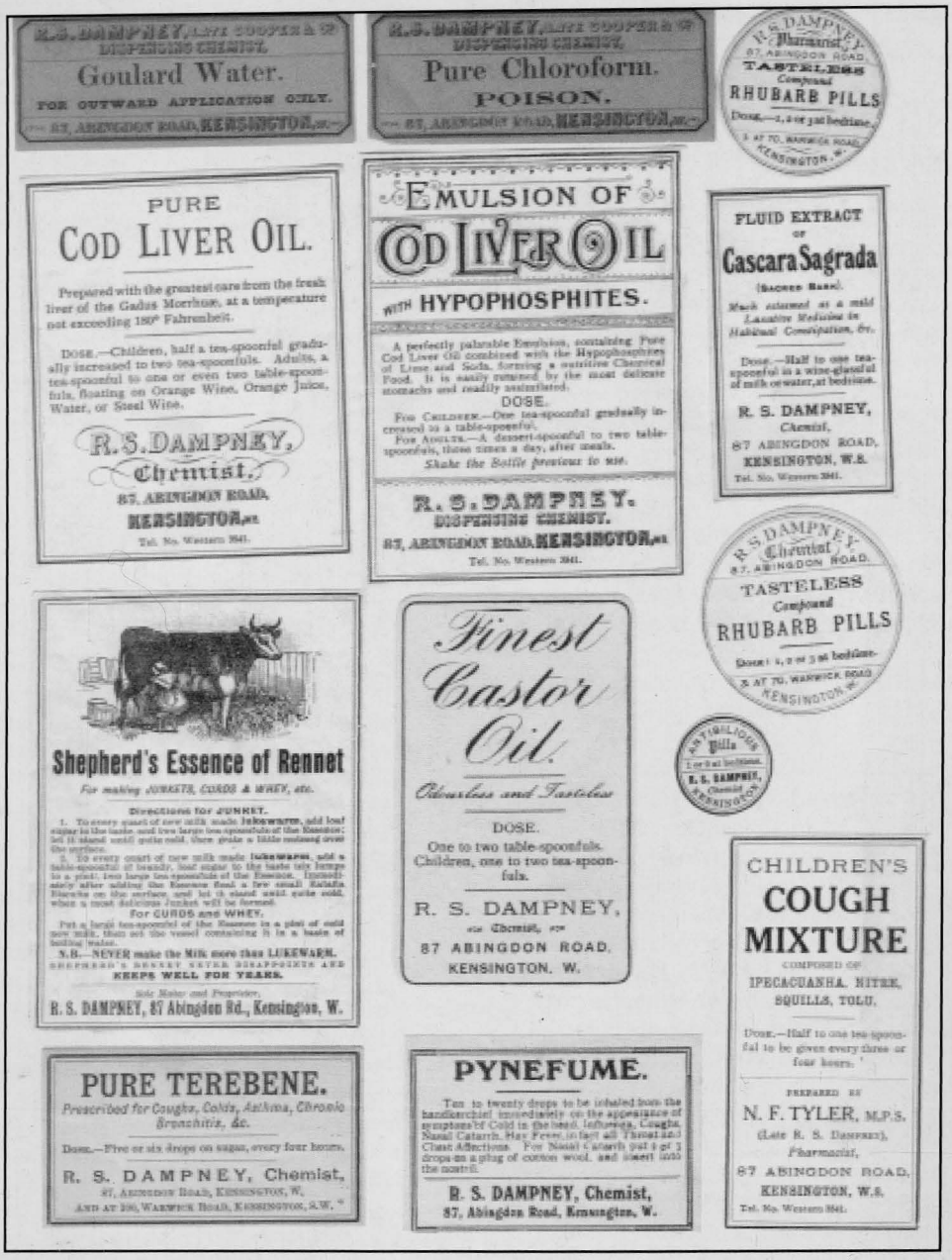

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840 Melton Road, Thurmaston, LEICESTER LE4 8BN

'People and Places'
37th International Congress for the History of Pharmacy
University of Edinburgh, Scotland
22nd June – 25th June 2005

Left, Reception by staff of ICMS at Appleton Tower, University of Edinburgh

The Welcome Stramash at Teviot Hall, University of Edinbu
Centre left, musicians of the Scottish Music Group Band, leader Sarah Northco
Edinburgh organiser, and Stuart Anderson, President of BSHP; below, deleg

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Patrizia Catellani from Italy and Renzo Console from England. Having co-operated on many publications, they met for the first time at the Edinburgh Congress.

The Chairman, Stuart Anderson, receives the piper at the Gala Dinner held in the Royal College of Surgeons of Edinburgh

At the International Academy evening the Edinburgh Renaissance Band play for the Edinburgh Early Dancers

Entertainment at the Gala Dinner was provided by Isobel Mieras (clarsach) and Jim Ferguson (violin)

Remembering how to make pills: Alison Strath demonstrating for delegates visiting the Drummond pharmacy at the Scottish Department of the Royal Pharmaceutical Society of Great Britain in Edinburgh

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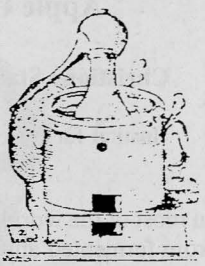
PHARMACEUTICAL HISTORIAN



Editor: Ainley Wade, BPharm, MPhil, FRPharmS
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Wednesday 28 September 2005

'From chemicals to pharmaceuticals to biotech: The transformation of ICI in the twentieth century' by Dr Viviane Quirke of Oxford Brookes University. Lambeth, 6.30 pm

Wednesday 16 November 2005

'An Occasion at Once Historical and Novel: The Foundation of the National Association of Women Pharmacists', by Dr Sue Symonds of Nottingham University, and a member of the NAWP Executive. This is a joint meeting between BSHP, RPSGB and NAWP. Lambeth 6.30 pm

Future dates 2006

Wednesdays 15 February; 10 May (Foundation Lecture); 21 June (afternoon); 20 September; 15 November

36th International Congress for the History of Pharmacy, Sinaia, Romania September 2005

Copies of the CD-Rom containing the proceedings of the Congress can be ordered from the Secretary of BSHP.

37th International Congress for the History of Pharmacy, Edinburgh, June 2005

This issue of the Pharmaceutical Historian contains reports of five of the papers presented at Edinburgh.

Royal Botanic Gardens Kew's Website

The Royal Pharmaceutical Society's original collection of materia medica can now be seen on the website of the Royal Botanic Gardens, Kew, as part of an educational initiative that will highlight how medicines have been derived from plants over the centuries.

The collection can be viewed by visiting www.kew.org/collections/ecbot/materia_home.htm or by clicking on the link on the Museum's homepage on the Society's website www.rpsgb.org/museum.

The Society's Museum, founded in 1842 as a collection of materia medica, had grown by the 1920s to be an internationally-renowned collection of around 20,000 specimens. After a period in Bradford the majority of this collection was transferred to the Royal Botanic Gardens in 1983, where it forms part of the Collection of Economic Botany.

The new online resource gives an overview of the history of the collection, as well as the opportunity to look at a variety of the specimens online, and to find out more about some of their original donors.

For more information about the collection, contact: Collections Manager, Economic Botany Collection, Centre for Economic Botany, Royal Botanic Gardens, Kew, Richmond, Surrey, TW9 3AE, UK.
Tel: +44 (0) 20 8332 5771, Fax: +44 (0) 20 8332 5768
E-mail: ecbot@kew.org

Annual Spring Conference at Bath 31 March – 2 April 2006

To be held at the Lansdown Grove Hotel, Bath.

Call for contributions from members

Have you a collection of unusual pharmaceutical artefacts or information about a particular pharmacy or associations between pharmacy and other aspects of life? Would you like to share your enthusiasm with other pharmacists?

Several 15 minute sessions have been set aside for contributions from members on the Saturday.

If you would like to fill one of them please give your details and a title for your contribution to Shirley Ellis at 1 Willow Way, Bottisham, Cambridge CB5 9BS or by e-mail to ellisbottisham@compuserve.com
Closing date 31 October 2005.

Apple Cider in Medicine

Christiane Staiger and Axel Helmstädter

Institut für Geschichte der Pharmazie, Philipps-Universität Marburg

In most of the world cider is an alcoholic drink made from fermented apple juice. It comes in a variety of tastes, from sweet to dry and in a range from 4 to 8% of alcohol by volume.

In the United Kingdom cider is predominantly made in the southwest and west of England.[1] Modern, mass-produced ciders are generally heavily processed and resemble sparkling wine in appearance. More-traditional brands, often known as scrumpy, tend to be darker and more cloudy, as less of the apple is filtered out.

French cidre is an alcoholic drink produced predominantly in Normandy and Brittany. Most qualities are usually sparkling. Until the mid-20th century, cidre was the second most-consumed drink in France after wine, before the the popularity of beer increased. In restaurants in Brittany, cider is sometimes served in traditional ceramic bowls or wide cups rather than glasses.

German cider, usually called Apfelwein – or with a more dialect pronunciation Ebbelwoi – has a tart, sour taste and an alcohol content of 5.5-7%.[2] It is mainly produced and consumed in Hessen, particularly in the Frankfurt area, but is also common in Baden, the area around Trier, and the lower Saar area. In the latter regions it is called Apfelmost or Viez (from the Latin word vice, meaning the second or substitute wine).

Next to the German border, in Luxembourg viez is rather like English scrumpy. It is cloudy, made only in autumn and varies from nonalcoholic to very alcoholic.

In Spain, the regions of Asturias and the Basque Country are well known for traditional sidra, an alcoholic cider of 4 to 8% strength. Sidra is traditionally poured in very small quantities from a height into a wide glass, with one arm holding the bottle extended upwards and the other holding the glass extended downwards. This is called to escanciar and is done to get air bubbles into the drink, thus giving it a sparkling taste that lasts a very short time.

Varieties of cider are known also in Slovenia (Jablocnik) and Finland (Siideri). In Australia, cider can be either an alcoholic drink as described before, or a sparkling non-alcoholic beverage made from apples. Cider in Japan and Korea sometimes means just a soft drink, not necessarily made from apples.

Considering the wide distribution of cider it is not surprising that it has a long tradition, not only as a beverage but also in folk medicine for the treatment and prophylaxis of several human and veterinary disorders.[3,4] In Britain and Germany, we find many historical examples of its medical application.

Scurvy

Cider was part of the early therapy of scurvy before lemons became the first-line naval prophylaxis and treatment.[5] It was James Lind, born in Edinburgh in 1716, who made it into the history books with his findings that citrus fruits were the most effective treatment for scurvy and an excellent prophylaxis for the sailors. Lind registered in 1731 as an apprentice at the College of Surgeons in Edinburgh and after eight years began serving as a naval surgeon in the Mediterranean. Until 1748 he was in action at sea off Guinea and the West Indies, although he spent most of his time patrolling the English Channel.

In 1747, on the HMS Salisbury at sea Lind made his well known experiment.[6] He selected twelve men from the ship, all suffering from similar symptoms of scurvy, and divided them into six pairs. He then gave each group different additions to their basic diet. All of the supplements were recommended at that time to keep scurvy at bay, but Lind thought of a direct comparison to find out which might be the best. In his study, two men received a quart of cyder a day, and two others took twenty five drops of elixir vitriol three times a day upon an empty stomach. One pair was treated with a course of half a pint of sea water every day, and another was fed three times a day with the amount of an electuary the size of a nutmeg, made of garlic, mustard seed, radish root, Peruvian balsam and gum myrrh. Two others were given two spoonfuls of vinegar three times a day upon an empty stomach, and the last two had each two oranges and one lemon every day.

Four out of the six groups reported no change, the men given cyder reported a slight improvement, but the two seamen fed with citrus fruits experienced a remarkable recovery. After only six days they were fit for duty. While there was nothing new about Lind's discovery – the benefits of lime juice had been known for centuries – he had proved the superiority of citrus fruits above all other 'remedies'. He undertook what may be the world's first controlled clinical nutrition study using human subjects.

The slight improvement of the two men given cyder, raises the question about the content of vitamin C in this beverage. In most modern books it is stated that cider contains no vitamin C, or at the best a trace.[7] But how does this correspond to the recommendation based on empirical knowledge of the 18th century that apple cyder might prevent scurvy? Well, we have to consider that cyder was produced then in a very different way than it is today.[8] Modern processing like fermentation, pasteurisation, dilution and filtration leads to a nice drink, but rather poor in nutrients. In an experiment, cyderists produced a real cyder the way it was made in England in the 18th century and found about 33 milligrams ascorbic acid per litre, a quite considerable amount.[9]

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Virtues of cyder

In Tübingen, Germany, Christian Friedrich Reuß published in 1781 a book *Survey on Cyder or Apfelwein, its nature, virtues and application.*[10] Reuß was born on July 7th, 1745 in Copenhagen and obtained his medical doctorate in 1769. He became medical professor in Tübingen in 1796 and received a Distinguished Service Medal, the Zivil-Verdienst-Orden in 1812, before he died October 17th, 1813.

D. Chriſtian Friederich Reuß,

Unterſuchungen

des

Cyders oder Apfelweins

nach ſeinen

Eigenſchaften und Würkungen

beym Gebrauch

nebſt einer Anweiſung

ſeiner vortheilhafteſten

Verfertigungs-Art.

Tübingen

bei Johann Georg Cotta

1781.

Figure 1. Christian Friedrich Reuß, title page. (Reference 10)

In the chapter on the virtues of cyder Reuß presents a collection of Latin, Greek and German sources on the healthy effects of the drink. Based on the principles of humoral pathology he recommended the beverage to warm the blood and cool the bile. Predominantly, he saw cyder as a remedy to clean the intestine. However, he stated that heavy drinking of cyder might cause – not surprisingly – colic and headache. But, he concluded, the benefits from regular drinking prevailed over these small uncomfortable feelings and a slight headache should be interpreted as evidence of good cyder quality.

Universal potency

Johann Christian Wilhelm Petsch was born July 7th, 1804 in Frankfurt am Main. He left Frankfurt in his youth and moved to Berlin in 1849, where he ran a wine and cyder business. Later, he ran a second business in his home town Frankfurt. Petsch published several books about the virtues of cider and suggested its regular use: this also stimulated his sales.

Figure 2: Portrait of Johann Christian Wilhelm Petsch (1804-1882). *Courtesy of Staatsbibliothek zu Berlin: Preußischer Kulturbesitz. Slg Darmst. 3d 1860(8) Petsch.*

The 12th edition was printed in 1862 and had the title *Light and truth in practical medicine or the healthy virtues and blessing effects of unfalsified cider, united with pure milk and fresh water.*[11] Petsch promoted a drinking course to cure heart conditions, arthritis, asthma, insomnia, gout, cough, hay fever, and many more disorders. A table listed dosing recommendations for the mixture of cider, milk and water starting with 1 teaspoonful 3 times a day for a newborn up to a 3-month-old child. Adults should take 1½ tablespoons of each component three times daily, strong adults 1¾. Besides internal use, he prescribed the application of cider externally, for example as a wound dressing or in cases of inflammation of the veins. In fact, Petsch believed his drink to be omnipotent and this is why he also recommended it for children. Altogether, the book listed 174 complaints to be treated successfully with the cider-milk-mix, including for example syphilis, loss of hair, epilepsy, and even rabies.

Petsch promoted his cure on every possible occasion. In a letter, Petsch wrote to an editor from Königsberg he met during a train journey.[12] Petsch asked him to promote his course of cyder drinking and signed the letter with his name and the professional addendum „Naturarzt", natural physician, although he never studied medicine or held a medical degree. For this, he was convicted twice of quackery by a Berlin court, in 1856 and 1858.[13-15] During the first trial he boasted of curing more than 25,000 patients with his cider. Because several witnesses testified to his success he was only convicted to pay a fine. As the letter written in 1862 proves he continued to claim himself a medical practitioner.

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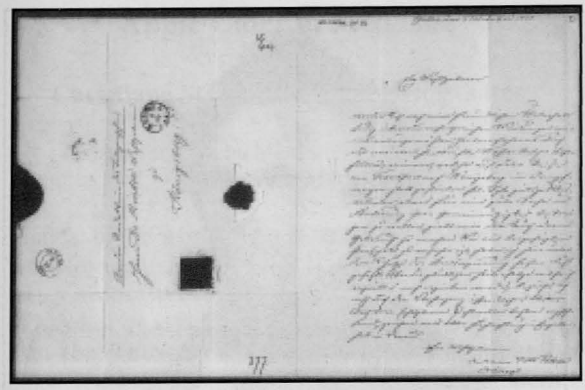
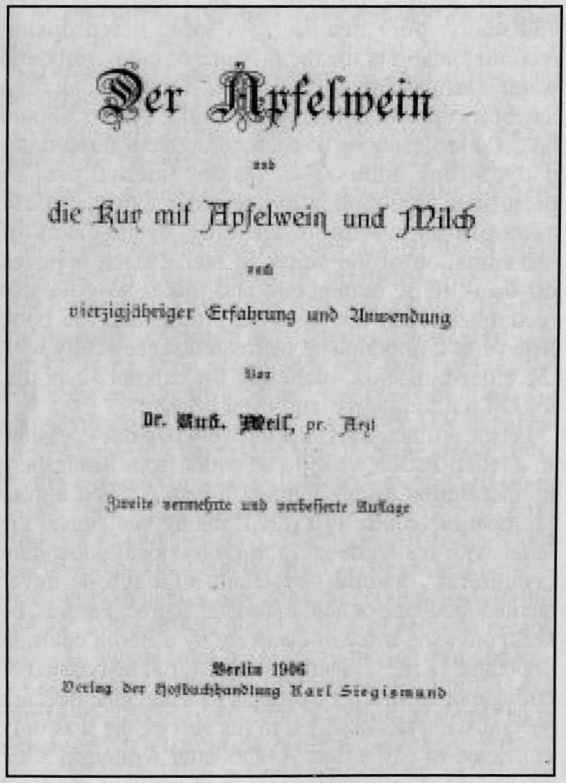


Figure 3: Letter Petsch wrote to an editor. *Courtesy of Staatsbibliothek zu Berlin* (Reference 12)

Cider whey

Rudolph Weil was born on August 28th, 1841 in Berlin. There, he studied medicine and obtained a PhD in 1864 with a work on diphtheria. He succeeded Petsch but recommended boiling the mixture of cider, raw milk, and water, then filtering off the precipitated casein, and drinking the cider whey.[16] Being a medical doctor, it seems Weil better realised the limits of the remedy and so in his book he still promoted the mixture but for an extensive, but slightly more rational catalogue of illnesses related to the blood cycle, nerve and skeletal system.


Der Apfelwein

und

die Kur mit Apfelwein und Milch

nach

vierzigjähriger Erfahrung und Anwendung

Von

Dr. Rud. Weil, pr. Arzt

Zweite vermehrte und verbesserte Auflage

Berlin 1906

Verlag der Hofbuchhandlung Karl Siegismund

Figure 4. Weil, title page. (Reference 16)

Dosage finding

Edouard Pierre Léonor Denis-Dumont stands pre-eminent in making a real attempt to analyse the value of cider in relation to certain diseased conditions. He was born in 1830 and died in 1886. In 1867 he was appointed Assistant Surgeon and Professor of Medicine at the École de Médecine, Caen, and in 1872 Full Surgeon and Professor. The 3rd edition of his book *The qualities of cider in medicine and hygiene, and its fabrication* was published in 1883.[17] Dumont undertook case studies in patients with gallbladder stones, vomiting of pregnancy, renal colic and gravel, gout, and other illnesses. From his findings he assumed malic acid to be the active agent and experimented also with different amounts of cider to find the best dosage.[8]

Summary

The literature on the medicinal use of cider is abundant. The few selected examples show that cider, also mixed with water and milk, was recommended against numerous complaints, and even promoted as a medicine of universal potency in humans. It was suggested to be particularly useful when taken regularly. Besides its internal use, cider was also applied externally.

The diuretic action of cider made it a highly reputed drug in a time when therapy was mainly based on the principles of humoral pathology. The considerable amount of ascorbic acid contained in the beverage in former times might explain its medicinal use from a more rational point of view. Although cider has no evidence as a strong remedy in modern medicine, it is still a tasteful popular beverage.

This paper was presented at the 37th International Congress for the History of Pharmacy, Edinburgh, June 2005.

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12. Letter Gotha Oct 10th, 1862 to Dr. Minden, Königsberg. Staatsbibliothek zu Berlin - Preußischer Kulturbesitz. Slg Darmst. 3d 1860(8) Petsch.

The letter reads: 'Ew. Wohlgeboren, werden sich noch einer freundlichen Unterhaltung über die erfolgreichen Wirkungen meines naturgemäßen Heilverfahrens durch die vereinten Heilkräfte Wasser Milch und Aepfelwein, erinnern, welche auf dero Reise von Frankfurt nach Königsberg im Dampfwagen stattgefunden hat. Ihr gütiges Anerbieten etwas für eine gute Sache und Förderung ihrer Gemeinnützigkeit beitragen zu wollen, giebt mir den Muth davon Gebrauch zu machen. Wie aus beigefügtem Prospekt zu ersehen ist, habe ich hier unter dem Schutze der Staatsregierung festen Fuß gefaßt. Über die glücklichen Heilerfolge, welche ich erzielt u. noch erzielen werde, beziehe ich mich auf den Vorhergang öffentlicher Bletter. Mich dero schetzbarem Wohlwollen bestens mit aller Hochachtung u. Ergebenheit im Voraus Ew. Wohlgeboren dankbarer JCW Petsch Naturarzt'.

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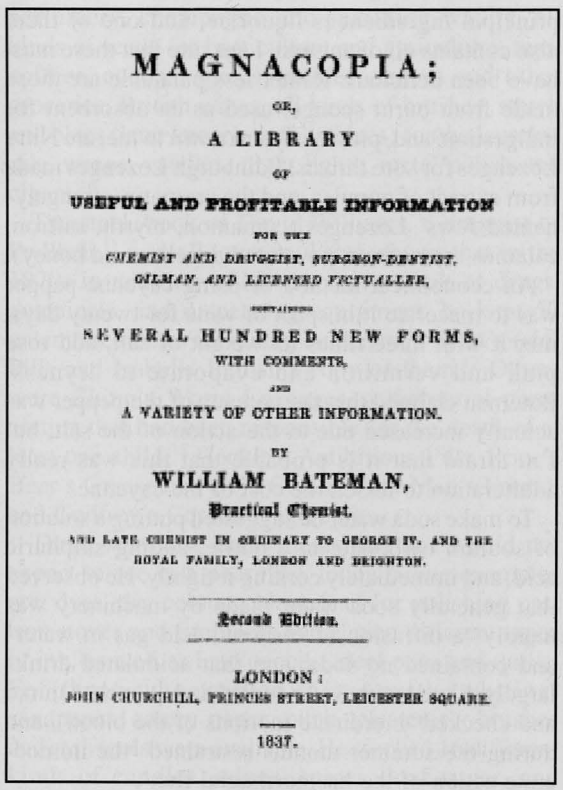
The Magnacopia of William Bateman: Stocks held by Chemists and Druggists in the 19th Century

W A Jackson

Last year, I purchased a copy of the second (1837) edition of a small book, entitled *Magnacopia* written by 'Bateman of Brompton',[1] who was described as a 'Practical Chemist, and late Chemist in Ordinary[2] to King George IV and the Royal Family in London and Brighton.' It contained a pastiche of varying types of preparation, many of which were new to me. In the preface Bateman emphasises the savings that could be made by druggists, hotel keepers and confectioners by employing some of the formulae given, mentioning specifically soda water and cayenne pepper. The contents of the book are divided into several sections.



MAGNACOPIA;

OR,

A LIBRARY

OF

USEFUL AND PROFITABLE INFORMATION

FOR THE

CHEMIST AND DRUGGIST, SURGEON-DENTIST, OILMAN, AND LICENSED VICTUALLER,

CONTAINING

SEVERAL HUNDRED NEW FORMS,

WITH COMMENTS,

AND

A VARIETY OF OTHER INFORMATION.

BY

WILLIAM BATEMAN,

Practical Chemist,

AND LATE CHEMIST IN ORDINARY TO GEORGE IV. AND THE ROYAL FAMILY, LONDON AND BRIGHTON.

Second Edition.

LONDON:

JOHN CHURCHILL, PRINCES STREET, LEICESTER SQUARE.

1837.

Figure 1. Title page of Bateman's Magnacopia

Chemist and Druggist

The largest section is devoted to the chemist and druggist, and contains a strange assortment of formulae and seemingly random pieces of information without any semblance of order.

In the middle of a number of perfumes that rejoice in names such as 'Odoriferous Esprit' (compounded from oils of rosemary, origanum, cassia, cajuput and cloves, tincture of angelica, with bergamotte [sic] and the essences of Tonquin bean, lemon, musk, ambergris, almonds and otto of rose) we find formulae for powders to produce red flames, containing strontian (sic) nitrate, sulphur, oxymuriate of potash (potassium chlorate) and sulphuret of antimony (antimony sulphide); and one for green flames, made from sulphur, nitrate of barytes (barium nitrate), potassium chlorate, orpiment (native arsenic trisulphide) and powdered charcoal. The authorities would be unlikely to view favourably any pharmacist selling these powders today.

The tinctures include Griffin's (made from honey, saffron, flowers of benjamin, opium, camphor, prepared kali, oils of aniseed and caraway, proof spirit and colouring), and Ruspini's (orris and rhatany roots, cloves, musk and rectified spirit of wine), both unfamiliar to me, and a powerful one for the gout, made from orange peel, Turkey rhubarb, contrayerva root,[3] zedoaira and cloves infused in neat French brandy.

Among the lozenges there are three in which the

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principal ingredient is liquorice, and one of them also contains oil of aniseed. I am sure that these must have been delicious. Rather less palatable are those made from burnt sponge, used as an absorbent for indigestion, and, previously unknown to me, are Nitre Lozenges for sore throats, Edinburgh Lozenges made from extract of poppies, and the aromatic, strangely-named Jews' Lozenges (cinnamon, myrrh, saffron, calamus aromaticus, powdered angelica and honey).

An economical method of using cayenne pepper was to macerate it in spirit of wine for twenty days, mix it with three times its weight of salt, add rose pink and vermilion and evaporate to dryness. Bateman claimed that the potency of the pepper was actually increased due to the action of the salt, but I'm afraid that it is probable that this was really adulteration to lessen the cost of the cayenne.

To make soda water he suggested putting a solution of sodium carbonate in a bottle, adding sulphuric acid, and immediately corking it tightly. He observed that generally soda water made by machinery was merely 'a diffusion of carbonic acid gas in water' and contained no soda; and that acidulated drinks largely diluted with water cooled and quenched thirst, and checked 'inordinate motions of the blood', and during the summer months restrained 'the immoderate action of the haemorrhagial flux'.

A formula for artificial gold said that it would have 'the colour, density, and ductility of pure gold, and might replace it in many cases'. However, there would be little chance of making money from it nowadays as every twenty four parts by weight contained fourteen parts of pure platinum. We should remember that platinum was not used in jewellery at this time, but was regarded as a chemical curiosity and was relatively cheap. It is interesting to note that before 1788 the Spanish government prohibited its export from South America, and ordered it to be thrown into the sea to prevent its use for adulterating gold.[4]

There follows a number of assorted formulae including a corn plaster, sedatives, pot pourrie (sic), hair dye, smelling salts, hair cream, shoe polish, black draught (a popular laxative), currie (sic) powder, green liniment, Parisian dentifrice, a remedy for toothache, gold lacquer, aromatic pastilles, lemonated (sic) kali, watchmakers' oil, sympathetic ink for writing secret messages, artificial Tunbridge Wells water, and a number of old patent medicines including Turlington's Balsam and Daffy's Elixir. This random selection continues with a liquid for etching steel or iron, Sir Humphrey Davy's corn solvent, horse balls, colours for show bottles, Mahomed's electuary (currants, senna, ginger, croton oil and syrup of roses), varnishes, tonic candy made from iron filings and sugar, court plaister[5] (sic), a dangerous-sounding depilatory containing quicklime, sulphuret of arsenic and starch powder, a popular opiate preparation known as black drop, a cheap substitute for burnt sponge, quince marmalade, and hartshorn blancmange, made from shavings from the antlers of deer. Jellies made from hartshorn were believed to be very nourishing, and were recommended in diets for invalids. However, they were expensive and shavings of the bleached bones of calves were sometimes substituted for them because they were much cheaper, though not as good.[6] A rather drastic remedy suggested for corns was to apply solution of potassium hydroxide, and then bind it round with a rag.

In all, the Chemist and Druggist section occupies 195 pages and contains more than 360 formulae. It would be tedious to give a complete summary of its contents, but I feel that I should mention the Preparation of Ipecacuanha with Sulphuric Ether which begins with the words: 'Take powdered hippo one part, ...'. Being familiar with preparations containing prepared toads, millipedes, goats' blood and powdered mummies, I was excited by this really exotic ingredient, but found to my disappointment, that 'hippo' was merely an old synonym for ipecacuanha.[7] However, some eye drops named 'Marshall's Guttae Vegetabilis' were made by dissolving lunar caustic (silver nitrate) in distilled water in which snails had been boiled. The name seems to be particularly unsuitable as all the ingredients were either animal or mineral. I wonder if the slime from the snails acted as a soothing lubricant. Certainly, snail water was used in folk remedies for chest complaints including consumption (tuberculosis) as well as snail syrup, prepared in a number of ways in Sussex. In the eighteenth century snails boiled in milk were said to be effective sometimes for consumption.[9]

Surgeon-Dentist

I am sure that any surgeon-dentist who was rash enough to purchase the book without seeing it would have been very disappointed. This section contained only six items, and, for two of them, the reader was referred to the Chemist and Druggist formulae where they had been given already. The six entries occupy less than three pages, and one and a half of these are devoted to a single substance - Mineral Succedaneum for filling decayed teeth. It consists of an amalgam of tinfoil and mercury. After giving the details for its preparation Bateman remarks:

> 'The absurdity of the use of this preparation is perhaps only known to those who have witnessed its inutility. As soon as the temperature is decreased below, or raised above a certain point, decomposition takes place, the mercury, which before was amalgamated with the foil, leaves it, and they become separate bodies.'

To add insult to injury, two of the remaining three compounds are made by adding finely powdered glass or levigated iron filings to this useless preparation.

Oilman

The recipes in the relatively small section for the oilman begin with a number of sauces, including a Tomata (sic) Sauce, which uses the old name for tomatoes - 'love apples'.

Instructions are given for colouring salt red or brown, and for making a preparation called 'soojie'

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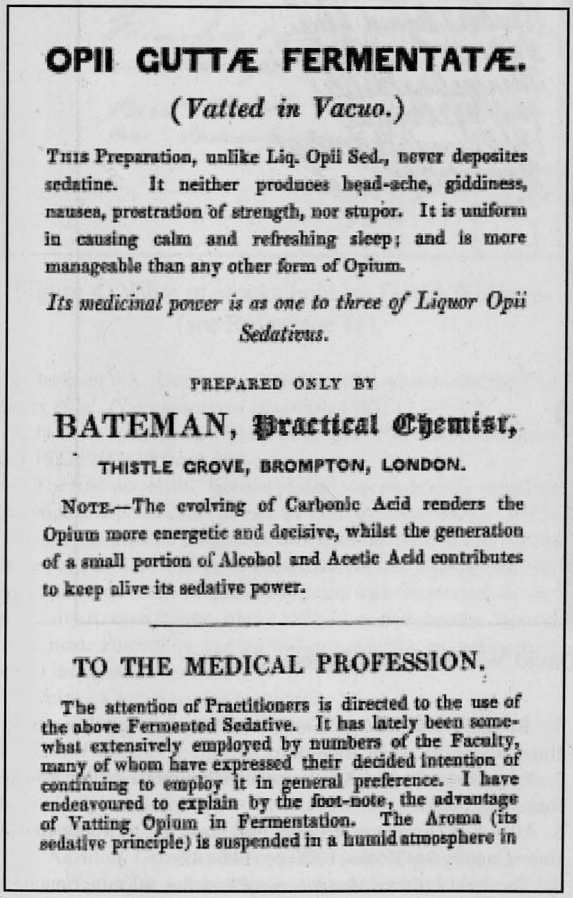
from sago, arrowroot and rusk powder.

Opii Guttae Fermentatae

The final two pages of the book are devoted to an advertisement for Bateman's own proprietary medicine 'Opii Guttae Fermentatae' (Figure 2). This was an oral preparation, and he claimed that it did not cause 'headache, giddiness, nausea, prostration of strength, nor stupor' although it was three times as strong as the more familiar 'Liquor Opii Sedativus', and caused calm and refreshing sleep. He explains that his preparation is a 'fermented sedative' that is 'vatted in vacuo'. The carbonic acid evolved makes the opium 'more energetic and decisive' and the alcohol and acetic acid helps to 'keep alive its sedative power.' This type of recommendation bears a strong resemblance to some modern advertisements for hair conditioners and anti-wrinkle creams.



OPII GUTTÆ FERMENTATÆ.

(Vatted in Vacuo.)

This Preparation, unlike Liq. Opii Sed., never deposites sedatine. It neither produces head-ache, giddiness, nausea, prostration of strength, nor stupor. It is uniform in causing calm and refreshing sleep; and is more manageable than any other form of Opium.

Its medicinal power is as one to three of Liquor Opii Sedativus.

PREPARED ONLY BY

BATEMAN, Practical Chemist,

THISTLE GROVE, BROMPTON, LONDON.

NOTE.—The evolving of Carbonic Acid renders the Opium more energetic and decisive, whilst the generation of a small portion of Alcohol and Acetic Acid contributes to keep alive its sedative power.

TO THE MEDICAL PROFESSION.

The attention of Practitioners is directed to the use of the above Fermented Sedative. It has lately been somewhat extensively employed by numbers of the Faculty, many of whom have expressed their decided intention of continuing to employ it in general preference. I have endeavoured to explain by the foot-note, the advantage of Vatting Opium in Fermentation. The Aroma (its sedative principle) is suspended in a humid atmosphere in

Figure 2. Advertisement for Opii Guttae Fermentatae

The Chemist and Druggist in the 19th Century

Although the arrangement of formulae in this little book seems to have been somewhat arbitrary, chemists and druggists did stock many of the items to be found in it. Several advertisements dating from about 1860 show that, as well as dispensing medicines, they sold patent medicines, soaps, perfumery, champagne and sparkling waters, all kinds of seeds for horticulture and agriculture, teas, coffees, cocoas, spices, pickles, sauces and other groceries, British wines, all kinds of brushes, starch and blues (later known as dolly blues) for the laundry, oils, waxes, candles, night lights, metal polish and cigars.[10]

The stock book of David Williams, a druggist of Pwllheli,[11] a small town in Wales, shows that in the 1870s in addition to his extensive stock of drugs, galenicals, and dispensing equipment, he kept 52 patent medicines including Anderson's Scott's (sic) Pills and Isabella Inglish's copy of them.[12] Others were Ching's Worm Lozenges, a mercurial preparation that had been responsible for the death of at least one child,[13] Cockle's Antibilious Pills, Price's Bear's Grease and Cold Cream, Poor Man's Friend, and Godfrey's Cordial (Figure 3).

There were also many items that one would not expect to see in a pharmacy today. Some examples are: dyes, dry colours, black lead for polishing cast iron stoves and fireplaces and eleven different types of ink, as well as lead pencils, steel pens and quills. For those who wanted them, putty, whiting, sandpaper, emery paper, pitch, plasterer's brushes and sash tools were available. He stocked 16 different kinds of candles, wines, spices, loaf sugar, and fourteen different sauces, including 'True Blue', Westphalia' and Chow Chow. Lovers of tobacco were not neglected. He had six kinds of snuff and as many pipe tobaccos. This was a period when inventors were struggling to produce a safe and reliable match,[14] and the *Magnacopia* contained a formula for 'Instantaneous Light Matches'. They were made by dipping the end of a wooden 'match' into oil of turpentine and then coating that end with potassium chlorate, sulphur and vermilion or carmine made into a paste using oil of turpentine. Williams kept Wax Vestas,[15] Fusees,[16] Vesuvians,[17] Lances Flammigeres, Warren's, German and Hunt's matches, and German tinder fusees as well as penny packets of German tinder.[18]

In 1879 his total stock was valued at £81.4s.0d (£81.20). Of this, drugs were valued at £26.5s.0d (£26.25), Patent Medicines at £12.15s.0d (£12.75) and cigars and tobacco at £7.10s.0d (£7.50) (Figure 4).

Conclusion

Nowadays there is a tendency for pharmacists to believe that they are superior to the nineteenth-century chemist and druggist, but we should remember the manipulative skills used in the dispensary and the immense amount of knowledge required to be able to advise his customers about the items he stocked. He also needed the ability to control stocks when, instead of two deliveries a day, there might well be one a month, or even every three months in some areas. Finally, we should remember that he was held in high esteem by the general public, a position that we are still struggling to regain.

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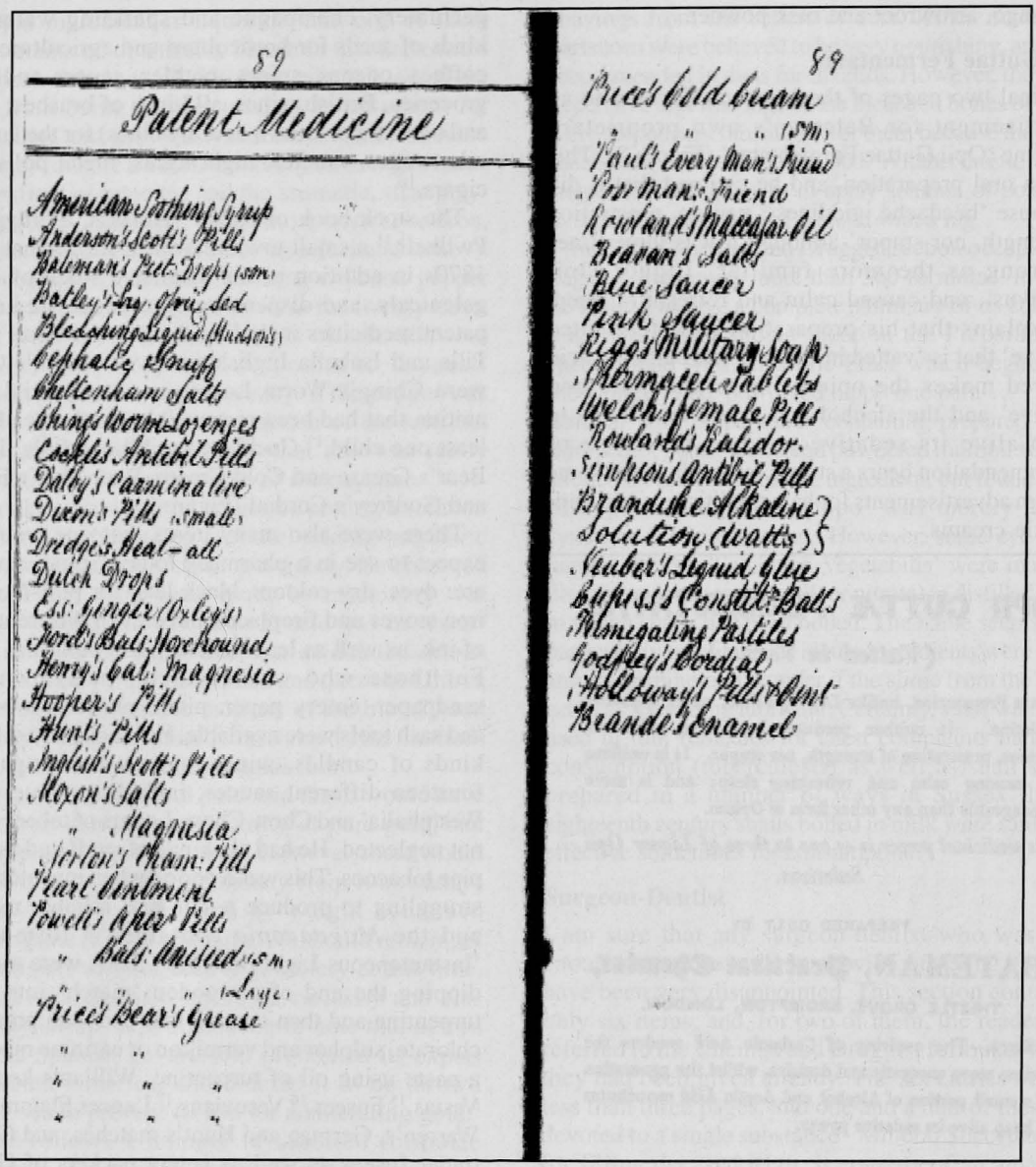

Figure 3. Patent medicines stocked by David Williams (see Reference 11).

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2. Chemist in Ordinary – by permanent appointment, not temporary or extraordinary.
3. The root of *Dortensia braziliensis*.
4. Parkes GD, Mellor JW. *Mellor's Modern Inorganic Chemistry,* Revised edn. London: Longmans, Green & Co Ltd, 1939, p. 833.
5. Bateman used tincture of benzoin and a weak solution of isinglass spread on silk, dried and then coated with a solution of resin turpentine in tincture of benzoin. Court Plaster was also known as Isinglass Plaster and Ladies' Sticking Plaster. For more information see Elliott MR. *A Short History of Surgical Dressings.* London: Pharmaceutical Press, 1964, pp. 67-68.
6. Reece R. *The Medical Guide,* 13th edn. London: Longman, Hurst, Rees et al., 1820, footnote p. 88.
7. Rouse Bros. *Rouse's Dictionary of Synonyms.* London: Rouse Bros, 1898, p. 87.
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10. Balshaw C. *Stranger's Guide to Altrincham.* Originally published circa 1858 by Charles Balshaw, Altrincham, reprinted by E J Morten, Didsbury, Manchester, 1973, pp. 123, 124, 129, 130, 134.
11. W Forbes. *The Druggists' Price-Book,* 4th edn. London: E Newman, 1846. Forbes is a printed stock book in which Williams entered by hand the quantities of those items that he possessed. In addition to the printed pages, there was a considerable number of blank pages and he entered in manuscript those items that were not represented in the printed pages or where he had a greater variety than those listed.

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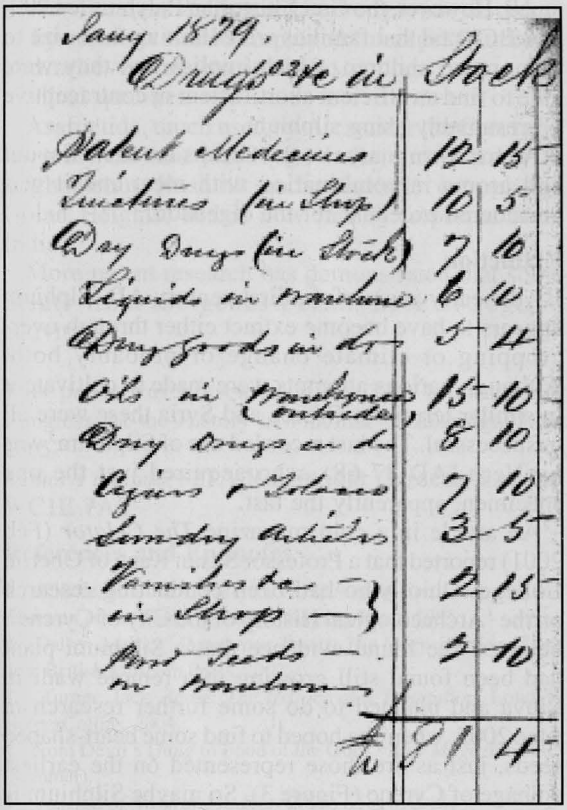

Figure 4. Value of stocks held by David Williams (see Reference 11).

12. Jackson WA. 'Grana Angelica: Patrick Anderson and the True Scots Pills'. *Pharmaceutical Historian* 1987; 17 (4): 1-5.

13. Jackson WA. 'Ching's Worm Lozenges'. *Pharmaceutical Journal* 1972; 209 (30 Dec): 164.

14. The first successful 'Friction Match' was made using antimony sulphide and potassium chlorate in 1826 by John Walker (1781–1859), a chemist and druggist of Stockton-on-Tees. It was sold in boxes of 100 with a piece of sandpaper for one shilling (5p). He never patented or advertised his invention with the result that commercially it was a failure. About 1829 a London chemist, Samuel Jones made a fortune by copying Walker's matches, and selling them under the name of 'Lucifers'.

15. Vesta – a match ignited by friction.

16. Fusee – a match with a mass of inflammable material at its head, used for lighting pipes etc, in a wind.

17. Vesuvians – Potassium chlorate and sugar packed with a glass bead of sulphuric acid. Upon crushing this, the resulting paste burst into flames.

18. 'Amadou, *German tinder, Touchwood, Spunk.* The *Boletus fomentarius*, when softened by beating, and cut into slices, is the true *amadou,* and this, when soaked in solution of saltpetre and dried, is *German tinder.*' In Redwood T. *Gray's Supplement to the Pharmacopeia.* London: Longman & Co; Simpkin & Co; et al, 1847, p. 639.

Silphium: The Wonder Drug from Cyrenaica

Michael Peretz

Silphium, an umbelliferous plant (probably *Ferula tingitana*), once grew prolifically and uncultivated on the dry mountainside facing the Mediterranean over a 200 square km area South of Cyrene in ancient Cyrenaica (present day Libya). Its important medicinal and culinary properties were discovered by the early Greek colonists of Cyrenaica from Thera in about 600 BC. According to Theophrastus 'It made them famous and many of them wealthy'.

Leptis Magna

My own interest in Silphium began in 1998 when I visited Leptis Magna in present day Libya, but formerly Cyrenaica. At that time Libya was getting very few tourists as all international flights were banned and in consequence when I got to Leptis Magna (by sea) there were only about a dozen visitors on what is still recognised as one of the major Roman archaeological sites in the whole of the Mediterranean. To quote Peter Jones (perhaps the best known modern Roman scholar) it is a site 'that makes Pompeii look anaemic'. Walking around the site I came across an ancient Libyan curator who proudly showed me a rather ragged guide book in English which claimed that long before Leptis Magna became famous in Roman times it had become prosperous as far back as 600 BC because of a wild plant called Silphium which grew abundantly on the dry mountain-side between Cyrene and Leptis Magna and was shipped in vast quantities to Greece and Rome between 600 BC and the early years of the first century AD, when it became extinct either through over-cropping or climate change or possibly both. Leptis Magna was the birthplace of Septimus Severus (father Phoenician, mother Italian) the first North African Roman Emperor AD 145-211, who spent the last three years of his life campaigning against the Scots before dying in York in February AD 211.

Literature on Silphium

I discovered that there is an enormous literature on the subject of Silphium with such fascinating titles as 'Ever since Eve', ' Birth Control in the Ancient World', 'From Plato to Pius'. This was not only because of its extraordinary medical and culinary properties but also because it became so valuable as to be worth its weight in silver. It destined Cyrene to become the richest city in north Africa until the development of Alexandria. Pliny in his natural history describes silphium as 'the most precious gift from nature to man'.

Coins minted in Cyrene from 600-200 BC had either silphium fruit, leaf, or the whole plant engraved on them. One of a series of Cyrenian four drachma coins shows a seated woman touching the plant with

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Figure 1. Coin from Cyrenaica

Figure 2. Coin from Cyrenaica

one hand while the other points rather suggestively to her genitalia (Figure 1).

The Greek scientist Theophrastus, a pupil of Aristotle 372-287 BC, described it as having 'a big thick root, a stem as long as giant fennel about five feet high and just about as thick, and a leaf similar to celery with yellow flowers on top' (Figure 2).

According to Theophrastus, the Silphium collectors tapped the resin carefully as it spoils and decays with age, but he also claimed that the pungent sap from the stem, root and leaves were widely used in medicine.

Medicinal Uses

Its medicinal uses were described by both Plinys, Theophrastus, Dioscorides and particularly Soranus, and included coughs, fluid retention, leprosy, wart removal, alopecia and, most famously, as an abortifacient, contraceptive and an aphrodisiac. Preparations for birth control included [Soranus] a tea made from its leaves, a pea-sized ball of sap mixed with wine and a pessary containing the juice, though Pliny the Elder who was against abortion listed Silphium as merely a menstrual regulator.

One presumes that by trial and error it must have worked as a birth-control regulator, but its use as an aphrodisiac was famously mentioned in the love poems of Catullus. But was this the well known placebo effect? The first-century BC Roman poet Catullus wondered how many kisses he and his Lesbia might partake? Why, 'as many times as there are grains of sand, as there are on Cyrene's silphium shores'.[1] The word 'kisses' obviously has a double meaning.

There is some interesting evidence of Silphium's wide use as an abortifacient and contraceptive in Roman times. The late J Lawrence Angel, a Smithsonian anthropologist, studied skeletons of adult females in ancient cemeteries in Athens, Corinth and Rome. 'Scarring and pitting in the pelvic region provide clues to the number of full term pregnancies.' Data compiled suggest that birth rates in Roman times had fallen below what was necessary to maintain the population. Sadly the clues Angel so confidently produced have been discounted by contemporary scientists, though the fact remains that during this period Roman families were inexplicably small. However, the Greek historian Polybius (ca 200-118 BC) said that families were limiting their size to one or two children, which implies that they were able to find an efficient abortifacient or contraceptive – presumably using silphium.

As for its culinary use the Greeks loved its flavour and aroma in combination with meat and it was considered excellent for the digestion.[2]

Extinction

By the early years of the first century AD Silphium appears to have become extinct either through over-cropping or climate change or probably both. Although various attempts were made to cultivate it in similar terrain in Greece and Syria these were all unsuccessful. The last recorded use of Silphium[3] was by Nero (AD 37-68), who acquired just the one specimen, apparently the last.

An article in a coin magazine *The Celator* (Feb 2001) reported that a Professor Susan Kane of Oberlin College, Ohio, who had been conducting research on the 'Archaeological History of the City of Cyrene', believed she found evidence that a Silphium plant had been found still growing in a remote wadi in Libya and planned to do some further research in June 2005, when she hoped to find some heart-shaped seeds, just as are those represented on the earliest coinage of Cyrene (Figure 3). So maybe Silphium is not totally extinct after all.

Figure 3. Heart shape on coins

Replacement by Asafoetida

Although the Romans were unable to find a plant with similar extraordinary medicinal properties, its culinary properties were shared by a similar umbelliferous plant *Ferula foetida,* from which a gum resin called Asafoetida is obtained. Indeed, while I was researching this subject I came across a cookery recipe[4] with the fascinating title 'From Devil's Dung [a synonym for asafoetida] to Food of the Gods' where, so the article states, despite its truly horrible smell it imparts a flavour, when used in cooking, which is truly sublime. (It is said to be still used as an ingredient of Worcestershire Sauce.) Asafoetida appeared in the 1932 *British Pharmacopoeia* on which I qualified as a pharmacist in 1940.

It is interesting that Greenish states in his *Materia Medica* 4th edition that asafoetida is a 'powerful

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nerve stimulant and is used in the nervous disorders of hysteria'. It is also employed 'to expel flatulence and relieve constipation'. So it does have some medical qualities.

Asafoetida, much used by Alexander the Great and his army on their journey to India, grows freely in Afghanistan, Kashmir and peculiarly enough the Golan Heights, and is now mostly imported from India.

More recent research has demonstrated that some plants from the genus *Ferula* have estrogenic activity.[5]

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The Impact of Thomas Linacre on German Medicine and the Role of Pharmacists: Linacre, Medicine and Michael Barth's Works (1530-1560)

Gerhard Helmstaedter

Deutsche Pharmazeutische Gesellschaft, Section of the History of Pharmacy and Science

The early decades of 16th century England constituted a period in which a new culture became widely diffused. New Learning as the insular pattern of humanistic ideas was understood as a range of cultural interests rooted in a renewed study of classical civilisation. Knowledge leads the mind to virtue and is achieved by a thorough learning. Educated men took it for granted that the finest text on any topic was the classical treatise on the subject. Greek texts were ranked higher than Latin writers.

The dominant idea was to actualize an already defined potential, the recovery of wisdom, which had with time become hidden.[1]

There is some question whether medicine was making any progress by these humanistic methods. The protagonists were thinking so. A tremendous task was fulfilled by medicinal philologists to edit the original texts of classical medicinal authors, to make critical translations and compilations. The medical schools adopted this construct and institutionalised it into the curricula of the medicinal faculties or physicians boards. In England, Thomas Linacre (c.1460-1524), was prominent.[2]

Thomas Linacre was born at Canterbury in 1460, and was educated at Oxford, where in 1484 he became a Fellow of All Souls. At Canterbury, Linacre had been under the care of William de Selling. In 1488 Linacre accompanied him to Bologna. Linacre remained in Italy for several years and received a humanistic and medicinal training in Florence, Rome and Padua. After his return he was made court physician and tutor of the Royal children, Prince Arthur and Princess Mary. He devoted his studies to the knowledge of medicine, hitherto scarcely successfully attempted by anyone born in England. After philosophical studies he meticulously translated major Galenical works from Greek into his Latin between 1517 and 1524 and was praised by contemporary humanists like Erasmus, Budé, Fuchs and Gesner.[3]

Appraisal in Germany

A German Professor of Medicine in Leipzig, Michael Barth,[4] undertook an appraisal, which took all biographical issues on Linacre into an overall view. As early as thirty-five years after Linacre's death Michael Barth delivered in the university an *Oratio de Thoma Linacro Britanno* (printed, Lipsiae 1560) full of bibliographical details, a mirror of English accomplishments in New Learning.[5]

Michael Barth used the then available literature on Linacre and made citations of statements by contemporaries. The editions of Linacre's medicinal translations and philological works were at hand in Leipzig. The university, reformed by Camerarius and Melanchthon, had some links to the English New Learning. The first professor of Greek was Richard Croke, who taught in Leipzig from 1515-1517, and his *Tabellae Graecas* were printed in Leipzig with a dedication to the town council. And Michael Barth in his career as artes professor introduced Thomas Linacre's treatise on Latin syntax into the curriculum.[6]

A famous Scottish refugee was teaching in Leipzig. In the *Oratio* Barth gives him a hidden tribute:

> I would like to speak about a renowned man, who is teaching here, but all of you know of his reputation, as you can hear him every day. If I praise him, some would criticise that as personal flattering.

It is – it must be – the theologian Alexander Alesius of Edinburgh who left England after the fall of Cromwell to join Melanchthon's band of divines. He was present at Worms and Ratisbon in 1540, turning down a chair at the University of Frankfort-on-the-

Oder. From 1543 he stayed in Leipzig, becoming rector of the university in 1555.[7]

Medicine in Tudor England

Here is a translated excerpt of Michael Barth's *Oratio* on Thomas Linacre's achievements in medicines:[8]

> In medicine and in Latin well versed he (Linacre) undertook the translation of selected Galenical works, which allowed an insight into nature, on the consistence of well-being and its restoration in case of illness by a thorough treatment of Galen's theories and doctrines. This counsel could be given exactly in the books *De temperamentis* and *De inequali intemperie*. Later on he considered bodily functions, their cause and effects in the translation of *De naturalibus facultatibus* and with this the *De usu pulsuum*. In these books the first of life principles, the *res naturales*, are explained, which constitute our bodily functions. He contemplated also the *res non naturales*, forces which don't belong to our physical constitution, yet are necessary to follow for the survival of body and soul. He turns to the Golden book *De sanitate tuenda* that deals meticulously with these conditions. This work met with considerable approval, because here Linacre could guide numerous men to engage in further activities. He started on the *Maximum Opus Galeni*, the *Methodus Therapeutica* (*M. Medendi*), in whose 14 books a holistic view is given on all the necessities for the treatment of distinct diseases, which comprises the third kind of things, the *res praeter naturales*, not easy to explain. Likewise the books *De (symptomatum) causis* and *De symptomatum differentiis* penetrate into the core of a rational treatment of illnesses.[9] ... What our Linacre thus achieved can not be said in a plain appraisal. His scientific endeavors could not prevent this Phoenix of Medicine from exercising the medical art for the health of countless patients, ... among them the two kings of Anglia, France and Scotia, Henry VII and Henry VIII. With his counsel and regal help he founded lectureships in Oxford and Cambridge and established in London too a college of physicians, being its first president, and gave them a house and legacies ...

There can be no doubt that Linacre's most enduring attainment was the establishment of the College of Physicians of London.[10] With the foundation of the RCP by King Henry VIII in 1518, which Parliament adopted in 1525, the Galenical system of medicinal science and treatment was made predominant.

Thereafter no person within the City of London should take upon himself 'to exercise and occupy as a physician except he was first examined'. He had to answer questions referring to Galen's and Hippocratic doctrines and treatises, preferably in Latin.[11] Privileges of the universities of Oxford and Cambridge were acknowledged.[12]

In the sixteenth century, as earlier, the majority of medicine was home medicine, with the difference that in early modern times the housefather or his deputy could rely on printed health breviaries. The monasteries did some nursing at the entrance gate. A doctor was called in cases of extreme gravity, in cases of infectious diseases or to attend wealthy people. There were few doctors, either graduates from universities or medical schools or licensed by bishops.

Everywhere so-called 'empirics' took their chance. The Charter of 1518 led to a body of professional men with legal, administrative and political powers. The professionalisation and interaction were a good leverage for modern medicinal ideas and the rejection of malpractice.[13] Since apothecaries provided the medicines for the doctor, their tutoring was involved in the charter. Doctors should learn the qualities of distinct medicines, herbal and mineral, and the apothecary had to provide qualitatively proper simple and compound drugs.[14] Pharmacopoeias had their focus on clearly labeled prescriptions in drug compendia like *Circa instans* and *Antidotarium Nicolai*, often bound together.

The aforementioned book is a list of simples with directions for the apothecary, whereas the *Antidotarium* lists recipes of compound medicines.

The Professionalisation of the Pharmacist

Michael Barth wrote many short medicinal treatises. He won early fame by writing a book on his hometown, Annaberg, a city in Eastern Germany made wealthy by silver mining.[15] His acclaim of pharmaceutical refinement is shown in a poem on the pharmacopolion of Annaberg where he emphasises pharmaceutical good manufacturing practice in preparing available preparations.[16]

Pharmacopolion

Continet haec etiam communes quasque tabemas,
Et longo tenet auctum Pharmacopolion usu.
Non hic simplicium compositorum,
Non hic quas Oriens, quas educat Hesperus herbae,
Radices, flores, fructusque legumina, plantae,
Succi, semina, aquae, cum corticibusque liquores,
Et lachrymae, gummi, preciosaque, aromata centum
Ligna, metalla tibi deerunt: vix ulla petentem
Deficiunt, non quae gignit medicamina tellus,
Quae mare, quae certam fiunt confecta per artem,
Quis vel tercentum possis depellere morbos:
Sive intra corpus sumenda, cavosque meatus,
Sive adhibenda foris, seu propter utrumque colenda:
Seu coquere humores velis, aut educere coctos,
Robore seu corpus medicas augere per artes.
Quin etiam iustis hac sumptibus urbe foventur,
Naturae arcanum docuit quos Phoebus Apollo,
Qui praestent populo veros medicaminis usus.

The poem describes local and foreign ingredients of simple and compound medicinal drugs, with reference to the humoral system, and its use to evacuate or to replenish.

The materia medica was the foremost herbal, with Dioscorides' *Materia medica* as the primary textbook. The humanistic revival in the sixteenth century brought forth new Greek and Latin editions of

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Dioscorides, a Cilician Greek of the first century AD as well, and a vast amount of commentaries, followed by herbals with naturalistic illustrations.[17]

The town was responsible for the erection of an apothecary shop and regulated the duties and education of its owners and staff. A basic education, with knowledge of Latin, and learning the essentials of the trade by apprenticeship were sufficient.

The apothecary was often a high-ranking citizen. This is shown in the person of Johannes Ralla (1500-1560), owner of the Apotheke zum König Salomo, Leipzig, who worked with his nephew Valerius Cordus and gave the pharmacy (and his daughter) to Maurice Steinmetz, professor of botany and mathematics, a consemester of Michael Barth, who praised the family in a nuptial poem.[18]

Humanism and the New Learning contributed to the progress of the medical profession and to a transformation of medical thought. Whereas the philosopher aimed at a complete understanding of things, the physician had to concern himself with what will accomplish his treatment. And the respected practitioner was well armed by the pharmacist for his task with a positive battery of cures, which he could apply to attentive patients. The Sixteenth Century saw a steady advance toward organized professionalism in all three branches of medicine, physicians, surgeons, and apothecaries.

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[..]In Medicina uero excolenda & ad Latinos traducenda sane non segniter fuit versatus sumpsitque uertenda sibi selectissima quaeque Galeni volumina - Hoc ipso labore [..] [..] Auxilio igitur & munitione regia sibi adiuncta Linacer in Academia Cantabrigensi medicis publicam lectionem unam: In Oxoniensi uero duas in perpetuum stabiliuit. Londini quoque collegium Medicorum fieri sua industria curauit, cuius praeses primus legitima electione, non propria constitutione, factus est cui & domum suam quam possedit satis splendidam et honestam, ante mortem testamento legauit atque attribuit [..]

9. The years of publication were Paris 1517 *De sanitate tuenda*, Paris 1519 *Methodus medendi*, Cambridge 1521 *De temperamentis et de inaequali intemperie*, London 1523 *De naturalibus facultatibus; De pulsuum usu, De symptomatis* (posthumous edn).

10. Charles Webster, Thomas Linacre and the Foundation of the College of Physicians. *Essays* 1977: 198-211.

11. Statuta Collegii Medicorum Londini, per Ioannem Caium presidentem, redacta, anno 1555, Questiones: In prima: de elementis, temperamentis, naturalibus potentiis, anatomicis, usu partium, et cetera naturali medicina parte ... ex Galeni libris de arte medicinali, locis affectis, causis morborum et symptomatum, febribus, puilsibus, prognosticis ex Hippocratis libro, in tertia ex libris de sanitate tuenda, medendi methodo, Ratione victus, simplici medicina, in quarto ex libris de crisibus, Aphorismis Hippocratis et id genus aliis. In Sir George Clark, *A History of the Royal College of Physicians of London*. Oxford, 1964;vol. 1: p. 387.

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13. McLean, Antonia. *Humanism and the Rise of Science in Tudor England*. London: Heinemann, 1972: 186-189.

14. Rawcliffe, Carole. *Medicine and Society in Later Medieval England*. Stroud: Alan Sutton Pub., 1995: 50-54.

15. Annaberga. *Libri tres, quibus continentur urbis Annaebergae in Misnio descriptio, ortus & positus*. Conscripti versibus a Michaele Barth. Basiliae per Ioannem Oporinum (1557), *Pharmacopolion*, Liber secundus, pag. 54.

16. Helmstaedter, Gerhard. Dichterisches Lob und Wertschätzung der Pharmazie bei dem Leipziger Arzt Michael Barth (um 1530-1581). *Geschichte der Pharrnazie* 2002; 54: 57-62.

17. Anderson, FJ. *An Illustrated History of the Herbals*. New York: Columbia University Press, 1977: pp. 1-22. Dioscorides' *De materia medica* was edited in Greek by Aldus Manutius in 1488, in Latin by Ruellius and others in the 16th century.

18. Helmstaedter, Gerhard. (2002) Reference 16, here: Gesner, Conrad. *In hoc Volumine continentur VALERII CORDI Simesusij Annotationes in Pedacij Discoridis Anazerbei de Medica materia libros V.* (Strassburg 1561), dedicated to Jo. Ralla *Con.Gesnerus magnae spei iuveni M. Ioannis Rallae Pharmacopolae Lipsensis foelicis memoria*. The poem is on the last pages of the book: GAMELION Michaelis Barth Annaebergensis ad M. Mauricium Steinmetz sponsum amicum s.s.

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A Set of Eighteenth Century Accounts

Peter M Worling

When William Hector was appointed Sheriff-Clerk to Paisley in Renfrewshire in 1873, he found that the County records were stored on a damp stone floor in the Town House (Council Chambers) in Paisley. They were in a very poor condition and affected by damp and decay. He was so concerned that he set about raising money to have the records sorted and preserved.

He wanted to make these records available to the public and he arranged the publication of a series of extracts from the Council Records.[1] These cover a wide range of subjects; some dealing with the work of the Council and others dealing with the action taken to deal with offenders and their punishment, often for very minor crimes.

Two of these extracts are of interest to us. The first is a paper dated September 1720, listing the contents of a Bill from Dr Campbell, who is described as a 'mediciner of Paisley' to one of his patients 'Walkinshaw of that Ilk', a Scottish title indicating the Walkinshaw was the Laird of the lands of Walkinshaw and the head of a family of some importance. The accounts cover the period February 1711 to 1720 for a total sum of £431.9s.2d Scots.

Lady Walkinshaw died in 1713 and by way of contrast we have the account for the payments to be made to the Herald Painter for emblazoning the arms and trappings to be used on the hearse and the horses that were used at the funeral procession. The total sum charged was £299.8s.0d. Scots.

All the sums are in pounds Scots. To convert this to the approximate value in pounds sterling the amounts need to be divided by ten. For example £100 Scots would at that time have been equal to £8.6s.8d. (or £8.30 in decimal currency). A more useful way of considering the sums is to compare these with the cost of living. For example, butter was 4s.6d. a pound (4.5d sterling) a leg of beef was £3.12s, (6s sterling) and a leg of mutton 14s. (1s.2d. sterling). The wage of a farm servant was £15 a half year (£1.15s. sterling) for a male and £7.14s (12s.10d sterling) for a female. A farm labourer could earn anything from 5s to 12s a day (5d to 1s sterling). These comparisons are very rough because the farm servants would be housed and fed on the farm, but it gives some indication of values.

On examining the accounts the first point that occurs is that Dr. Campbell's charge for attendance on his patients is very modest. It amounts to £100 for six or seven year's service and from this it appears he made his profit from the supply of drugs and not from his professional services. He also appears to have been willing to grant extended credit to his patients as the first item on the accounts is for a credit of £168.12s.4d.

A range of products was supplied. These included plasters, ointments, infusions, conserves, purges and clysters. The majority of items are to treat the Laird, who seems to have enjoyed a good social life. He was supplied with purgatives, vomiters and clysters fairly regularly. The ointment for the itch was a common prescription, but it was generally supplied to the closely packed citizens of the town rather than for the gentry. Mrs Bettie is mentioned; perhaps she was the housekeeper and John Lang a servant. The horse is supplied with a pot of ointment and there is also a charge for supplying a horse.

More surprising is the charge for a 'cere cloth' or mort cloth as it was often known. This was a highly decorated cloth to cover the body. It was usually kept at the church and hired out to those who could not afford a coffin. It was purchased in the year lady Walkinshaw died, but as we shall see she had a coffin. Perhaps it was in anticipation of the laird's demise.

WALKINSHAW OF YT ILK, HIS ACCOMPT.

September 1720

[page 1]

Imp: p ane Accompt Given in to him is £168. 12. 4

Feb i	Item for fine borx	00. 06.0
	It for oxecrocey	00. 16.0
	It for Rosin	00. 01.0
May 17	It for otl of mace	00. 07.0
	It for fine mastick	00. 06.0
May 17ii, 19	It to himself for moliet plaster	00. 02.0
22.	It for 3ozs ointment for the itch	00. 02.0
	It to him, ane vomiter	00. 10.0
June 10	It to him, materials for a dyet drink	00. 08.0
	It for Arsnick	00. 02.0
July 25	It 4 ounces of fine Venus turpentine	00. 12.0
Nov 6	It for saltpetre	00. 04.0
Decii, ii ii	It for sallett oyl	00. 03.0
	It for Empl de minio	00. 02.6
March 3,1712.	It for Venus turpentine	00. 02.0
4	It half ane ounce of camphire	01. 04.0
	It ane glass with hungary water	00. ii. 0
15	It ane glass with sp: of cemphire	01. 04.0
	It his dyett drink	02. 08.0
Aprill 8	It ane pott of ointment for his horse	00. 16.0
	It four ounces of oyl of turpentine	00. 10.0
June 18	It ti Mrs Bettie, ane pot of ointment for itch	00. 09.0
ii	It to your servant, John Lang ane Liniment	00. 10.0
	It two purges	00. 10.0
	It ane Linement	00. 12.0
August 5	It to himself, ane vomiter	00.10.0
Sept. 2i	It materials for a sacculus purgans	02. 08.0
	It to Mrs. Bettie, materials for ane infusion	01. 08.0
	It oz ii aq: camphorate	0. 08.0
Dec, Ii, 1713	It for two clysters at Inlithgow	03. 00.0
14	It ane vomiter	00. 10.0
	It ane glass with ox succini	00. 18.0
	It materials for ane antieplegtick infusion in wine	05. 11.0
	It materials for a purgative infusion	02. 03.0
16	It materials for his ordinar drink	00. 18.0
	It ane liniment	01. 02.0
	It ane mixture	00. 17.0
	It ane cordial Julep	01. 10.0
17	It ane clyster	01. 10.0
	It the Julep renued	01. 10.0
	It the clyster renewed	01. 10.0
		£208. 04.00

https://doi.org/10.24355/dbbs.084-201802140835

[page 2]

	It ane Large cerecloth	66. 13.4
	It powders and oyls	06. 00 0
	It to the family for saltpetre	00. 06.0
May 4,1714	It to Mrs Bettie ane plaster	00. 14.0
	It ten doses of spermatic caiti	0i.10.00
	It ten doses volatile salt of harthorn	00. 15.0
8	It ane pott of Conserva vosary	00. 14.0
25	It ane pott of Conserve renued	00. 14.0
June 25	It to her, ane vomiter	00. 10.0
	It for cloves	00. 08.0
	It for ane horse sold to Walkinsha	45. 00.0
	this page	123.04.4
	the other page	208.04.10
Summa in whole		33i. 09.02
It for attendance for six or seven years bypast		£100.00.0
Summa of the whole is		£431.09.02

If we now look at the accounts from Henry Frazier the Herald Painter, we can see the level of expenditure that was required to pay proper respect to the memory of the deceased. The items prepared include the Achievement of Lady Walkinshaw painted on a lozenge, the proper form for a lady's mourning coat of arms at the time. There is decoration to the coffin, the horses and their trappings. Some idea of the appearance of a funeral of the time can be seen from the illustration.These accounts only cover the costs of decoration and do not include the costs of the entertainment of the mourners at the funeral, which would have been considerable. No records of these have been found. However there are some miscellaneous accounts recorded. These include one from John Reid for 'a silver socket yt carries ye candle shears broken at the funeral', another for putting in three glasses in the clocks head broken. Also we find there is a bill for 12 pints of brandy, 12 pints of cherry brandy and a further two pints of brandy. Despite the sad occasion it seems to have been enjoyed by some.

Accompt for the Funerall Painting of the Lady Walkinshaw

July 14, 1750 – To Henry Fraizer, Herauld Painter

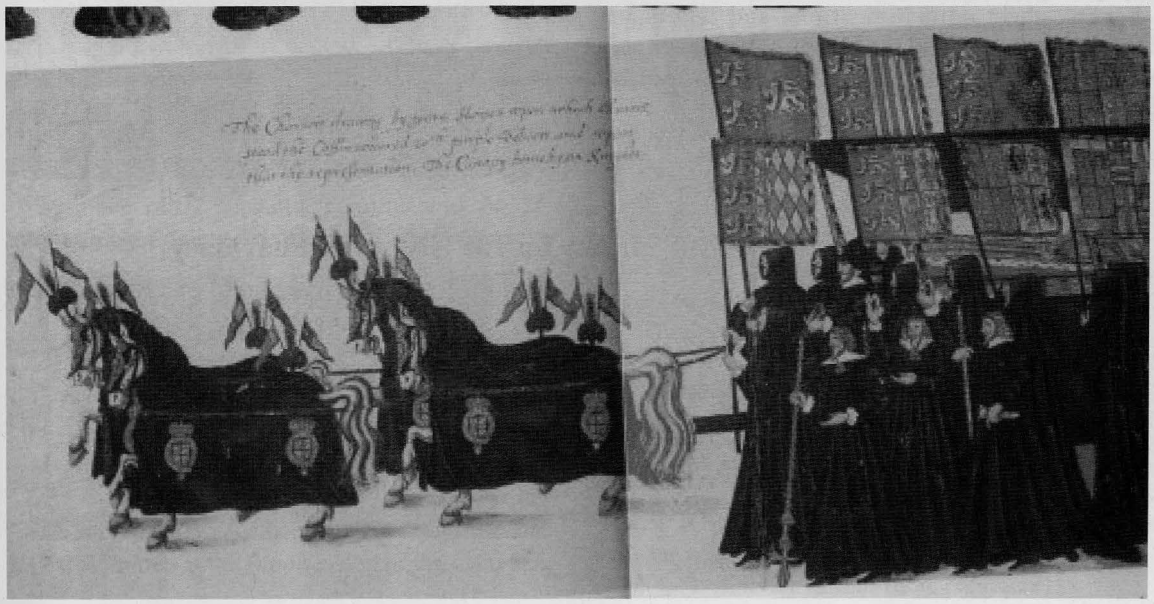
Imp for 1 lozing arms with the whole achievement thereon	£18. 0. 0
Itt for 8 branches thereto	24. 0. 0
Itt for 4 mort heads to the sd lozing arms	4. 0. 0
Itt for ciphers and tears thereto	3. 0. 0
Itt for 8 branches done in large for the coffine	26. 0. 0
Itt for 8 mort heads for the said coffine	6. 0. 0
Itt for ciphers and tears thereto	3. 0. 0
Itt for 8 branches done one white iron plates upon both sides for the pale	48. 0. 0
Itt 24 small escutcheons with the defunct arms thereon for ye pale	44. 0. 0
Itt 34 mort heads to the sd pale	34. 0. 0
Itt for ciphers and tears to the said pale	6. 0. 0
Itt for 6 large escutcheons for the horses	36. 0. 0
Itt for 12 mortheads for the horses	12. 0. 0
Itt for 12 theins for the horse ears guilded on black teffetae	18. 0. 0
Itt for 6 browpieces for the horse with ye defuncts name within a garland thereon	7. 4. 0
Itt for 8 white iron plates the branches were painted one	4. 0. 0
Itt for 8 iron pikes the plates stood one	4. 0. 0
Itt for blacking the frames and sticks for the horse's ears	0. 18. 0
Itt to the tatlor for sewing the searge to the lozing arms	0. 18. 0
Scots,	£299. 8. 0

Author's address: 29, Fernielaw Avenue, Edinburgh EH13 0EF; p.worling@virgin.net

Reference

1. Hector, William. *Selections from the Records of Renfrewshire.* J & J Cook, Moss Street, Paisley, 1878.

Illustration. A funeral procession.



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British Society for the History of Pharmacy

840 Melton Road, Thurmaston, Leicester, LE4 8BN
Tel: 0116 264 0083, Fax: 0116 264 0141, Email: bshp@associationhq.org.uk
Website: www.bshp.org

The British Society for the History of Pharmacy was formed in 1967 under the aegis of the Pharmaceutical Society of Great Britain, having originated from its History of Pharmacy Committee.

BSHP seeks to act as a focus for the development of all areas of the history of Pharmacy, from the works of the ancient apothecary to today's ever changing role of the community, hospital, wholesale or industrial pharmacist.

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Pharmaceutical Historian

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1999	Mrs Enid Lucas-Smith
2000, 2001	Dr Peter M Worling
2002, 2003, 2004	Dr Stuart Anderson

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Official Welcome to the Congress: Left Angela Timoney, Chair of the Scottish Executive of the Royal Pharmaceutical Society; right, Hemant Patel, President of the RPSGB

Three new members of the International Academy for the History of Pharmacy; from left, Axel Helmstädter (Germany), Peter Worling (corresponding member), and Peter Homan with Wolf-Dieter Müller-Jahncke (President of the Academy)

Members of the executive committee of the International Society for the History of Pharmacy

ISHP officers: from left, François Ledermann (past president), Axel Helmstädter (secretary) and Olivier Lafont (new president)

ISHP Committee at the final session of the Congress

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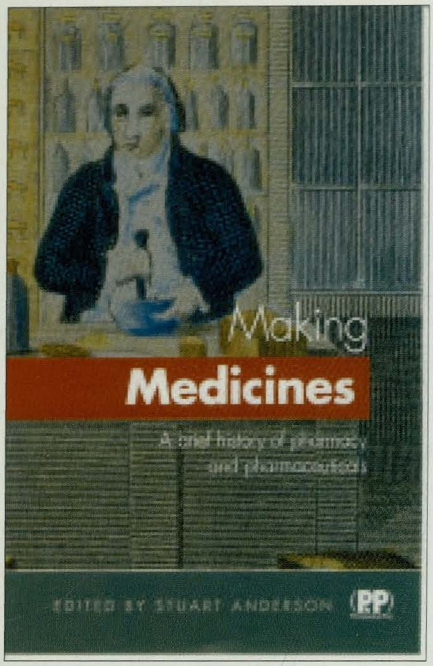
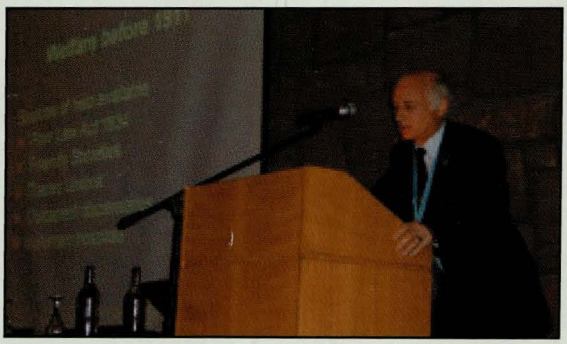


Making Medicines: A brief history of pharmacy and pharmaceuticals has been published by the Pharmaceutical Press, the publishing arm of the Royal Pharmaceutical Society of Great Britain, and an order form will be sent to all members. The book has been edited by Dr Stuart Anderson, president of BSHP 2003-5, and almost all the 15 chapters have been written by members of the Society. A review will appear later.



Four speakers: clockwise from top left, Dr Stuart Anderson, Dr Peter Worling, Dr Christiane Staiger, Dr Steven Kayne.

Photos courtesy of Peter Homan, Christiane Staiger, John Stone, Ainley Wade and Peter Worling

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PHARMACEUTICAL HISTORIAN

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British Society for the History of Pharmacy
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2005	Dr Shirley Ellis

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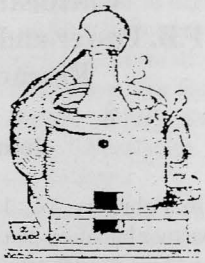

Editor: Ainley Wade, BPharm, MPhil, FRPharmS
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Diary

Wednesday 15 February 2006

'Chelsea College: the Manresa Road Days'. Dr A E Theobald

31 March to 2 April 2006

BSHP Annual Spring Conference at Lansdown Grove Hotel, Bath

Wednesday 19 April 2006

'Keep taking the Medicine: A Brief History of Pharmaceutical Disasters' by Dr Stuart Anderson, past president of BSHP. A joint meeting of the Hull and District branch of RPSGB with BSHP at the Beverley Arms Hotel, Beverley, E. Yorks. at 7.00 p.m.

Future dates 2006

Wednesdays 10 May (Foundation Lecture); 21 June (afternoon visit); 20 September; 15 November

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36th International Congress for the History of Pharmacy, Sinaia, Romania September 2005

Copies of the CD-Rom containing the proceedings of the Congress can be ordered from the Secretary of BSHP.

British Society for the History of Medicine

The BSHM Newsletter is now available on their website at www.bshm.org.uk A few hard copies are available on request to the Secretary of BSHP.

Index

The index to the Pharmaceutical Historian 2001 to 2005 is published with this December issue.

British Society for the History of Pharmacy

At its meeting in September, the Committee of BSHP elected Dr Shirley Ellis as President and Dr Michael Jepson as Vice-president.

Dr Peter Worling was designated an Honorary Life Vice-President in gratitude for his hard work which ensured the success of the 37th Congress at Edinburgh.

Dr Peter Worling writes:

I am very conscious of the honour and the kind thoughts of the Committee of the Society in electing me an Honorary Life Vice President as a mark of the work I put in to the recent Congress in Edinburgh of the International Society for the History of Pharmacy. However it should be made clear that although I was the "man on the spot" this was a team effort and its success was due in no small measure to the work put into its preparation and running by many of our members and committee.

We are very grateful for the sponsorship that was raised by our members in this country and in Europe. Without this we would have had to curtail the scope of the conference and the social programme. We had marvellous support form the President and the officers of the Royal Pharmaceutical Society and it was a great encouragement to have the support of the Society's museum in our exhibition. Our editor made a fine job of the printing and there were a number of our members involved in the marshalling and controlling of the conference which they did without complaint. Our professional team ICMS also did a good job handling all the bookings, travel, excursions, accommodation and administration.

It is difficult to mention names without leaving someone out. However I would like to thank our President, Dr Stuart Anderson, who was responsible for the professional programme which was the backbone of our meeting and our Hon. Secretary Mr Peter Homan who had to bear the brunt of my complaints in the year before the conference and did a great deal of the fetching and carrying during the conference.

My greatest satisfaction is that our Society has shown that we can organise and run a successful major conference.

Yours sincerely

Dr Peter M. Worling

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Chemistry and Commerce: F.B. Power and the Wellcome Chemical Research Laboratories

John Parascandola

On February 14, 1895, Henry Wellcome, whose partner had died just a few days earlier and left Henry as the sole proprietor of the Burroughs Wellcome pharmaceutical company, wrote to his old friend Frederick B. Power in New Jersey.[1] Power had himself just recently lost his wife, and now Wellcome offered his grieving friend a new opportunity. He wrote:

> My first thought is to desire you to come to London. I feel that I could aid you in your progress and I know you can greatly aid me - What I suggest is that you come and let me fit up for you a most thorough and complete experimental Laboratory near my Offices ...

Wellcome went on to explain:

> I want you for constant consultation as I propose to enter much more into scientific medical chemical products – Whatever you are receiving from your present firm I would pay you more and Fred how dearly I would like to renew the companionship of twenty one years ago – I would like it if we could live together and be chums again – You are the one I look to and I feel now that I could serve you - We have drifted apart not in heart.

And as a final inducement to his friend, Wellcome made it clear that:

> I should not ask you to take up any business cares or actual manufacturing drudgery but only experimental and strictly scientific etc. such as I know is most congenial to you.

Wellcome's words in this letter embody the two main objectives of this paper, to examine the friendship between Power, the academic scientist, and Wellcome, the entrepreneur-philanthropist, and to discuss the beginnings of the Wellcome Chemical Research Laboratories under Power's direction in relation to the development of research in the pharmaceutical industry.

Education

Let us begin by looking briefly at the backgrounds of the two men. Henry Wellcome was born in Wisconsin in 1853, received his pharmacy degree from the Philadelphia College of Pharmacy in 1874, and emigrated to England in 1880 to form a partnership with fellow American expatriate pharmacist Silas Burroughs, thus founding Burroughs Wellcome and Company. We shall have more to say about Wellcome shortly in connection with his relationship with Frederick B. Power.[2]

Power was an exact contemporary of Wellcome, born in the same year as his friend, 1853, in Hudson, New York. Although Power received his early education in private schools, a decline in the family's financial circumstances compelled him to leave school at age thirteen. He worked for five years in a local drugstore before accepting a similar position in Chicago in 1871. It may be that Power intended to take the two-year evening pharmacy course at the Chicago College of Pharmacy, one of the relatively few pharmacy schools in the country at that time, where it could be completed even while working full-time.[3] Certainly we know that Henry Wellcome, who had also become interested in pharmacy, moved to Chicago himself in 1872 with the intention of attending the College, although he also had to work in a pharmacy during the day to earn his expenses.[4]

The Chicago period was not a particularly happy one for Wellcome. He had arrived in the city shortly after it had been devastated by the great fire. His biographer, Robert Rhodes James, concluded that the most important thing that happened to Wellcome in Chicago was the beginning of 'the greatest friendship of his life', that with Power. James wrote:

> Frederick Belding Power was also working in a pharmaceutical store to earn enough to finance his future studies. How they met is unknown, but when they did, they found an immediate and, as it happened, lifelong affinity, although they were in many respects very different personalities. They had at least in common the fact that they were poor – Wellcome even more so than Power – and wished to achieve distinction in pharmacy.[5]

Shortly thereafter Power decided to move to Philadelphia to undertake studies at the nation's oldest, and at that time probably most prestigious, pharmacy school, the Philadelphia College of Pharmacy. He soon wrote to Wellcome to urge him to come to Philadelphia and the College, and in 1873 Wellcome did indeed move to the City of Brotherly Love. Both men worked in Philadelphia pharmacies while attending school, and they graduated from the College together in 1874.[6] In his biography of Wellcome, James emphasises how different the two men were, and yet how close they remained as friends throughout their lives. Power aspired to academic distinction and Wellcome to a profitable career in pharmacy. Wellcome was attracted to the scholar in Power, and admired his intellect. Power, on the other hand, seemed to admire Wellcome's ambition and his practical approach. James recounts the story of a visit by Wellcome to the Power home for Christmas in 1874, where Wellcome showed Power's mother his worn-out wallet, commenting that although there was only a few cents in it at the time, some day it would be bulging. James then added:

> This incident was characteristic of the difference between them - Power, the serious and unworldly scholar; Wellcome, the entrepreneur, to whom pharmacy was the means for him to escape poverty and to become rich.[7]

Clearly these were hard times for Wellcome. After he graduated and was working for the drug firm of McKesson and Robbins in 1876, Wellcome wrote to Power to pay him back $35.00 that his friend had loaned him earlier. That loan, Wellcome noted, 'bridged me over at a very needy time.[8]

Meanwhile, Power went abroad after graduation to

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the University of Strassburg, then under German control, to study plant chemistry. He received his Ph.D. at Strassburg in 1880 under the noted pharmacognosist Friedrich Flückiger and returned to the United States to teach analytical chemistry at his alma mater, the Philadelphia College of Pharmacy. In 1883 he was called to Madison to become the first director of the newly-created pharmacy program at the University of Wisconsin. Power followed the lead of the only other pharmacy school at a state university, namely the University of Michigan, in abandoning the part-time evening lecture courses of the proprietary colleges of pharmacy and in developing a program requiring full-time attendance and characterised by a strong emphasis on basic science, including laboratory instruction. He thus placed pharmaceutical education at Wisconsin on a firm scientific footing, and the school became a leader in the field. While at Wisconsin, Power also conducted research on essential oils, alkaloids, and other constituents of plant drugs.[9]

Move to London

Power left Madison and the academic world in 1892 to become director of the chemical laboratories of Fritzsche Brothers in Passaic, New Jersey. His life was then disrupted by the tragedy of his wife's death after the birth of their third child, who survived for only a few days. It was at this point that the letter from his friend Henry Wellcome cited at the beginning of my paper arrived. Wellcome's offer came at a propitious time. Power had already become unhappy working for Fritzsche Brothers. In letters to his former student and his successor at Wisconsin, Edward Kremers, Power confessed that his efforts at independent research were frequently interrupted by work associated with the business. After the death of his wife, Power wrote to Kremers:

> I am now more desirous than ever that we should get away from Passaic, where the cup of sorrow has been drained to the bitter dregs, and should be glad enough to get into an atmosphere where dollars and cents are not the ideal and inspiration of life.[10]

Power thus agreed to go to London to head up the new chemical laboratories that Wellcome wished to establish. Leaving his two children in the care of his sisters in Hudson, New York, Power set off for London in March, 1896.[11] To celebrate the official opening of what was then called the 'Wellcome Research Laboratories' and to honour Power, its director, Wellcome arranged a dinner in London on July 21, 1896.[12] Power was to remain as the director of the Chemical Research Laboratories until 1914.

The Chemical Research Laboratories were initially quite small. Power was able to hire his first employee, chemist H.A.D. Jowett, in September of 1896. The original quarters of the laboratories consisted of just one room. The staff and space available to Power continued to increase, however, and by 1899 the laboratories had moved into a building specially provided for them. The staff also increased in size, with just over twenty individuals employed between 1896 and 1914. The new building was located at 6 King Street in the Snow Hill area of London. The first floor contained Power's office and the library, and the other three floors were devoted to laboratories.[13] Power described the laboratories as follows:

> They are similar in their arrangement, are provided with gas and electricity for both illuminating and heating purposes, and completely equipped with all the necessary apparatus and appliances for conducting chemical investigations. There are pumps on each table for filtration under pressure, and special adaptations for vacuum distillations. A separate connection with the electric main supplies the current for heating iron plates used for the distillation of ether and other similar liquids. Each laboratory is provided with fine analytical and ordinary balances, which are carefully protected from dust and moisture by tightly-fitting glass cases. There are also telephones on each floor, so that communication between the different laboratories or with the Director's office can be quickly effected.[14]

As Tillie Tansey and Rosemary Milligan have pointed out, research at Burroughs Wellcome had begun before the creation of these laboratory facilities. Physiological research began at the company in 1894 in connection with the production of diphtheria antitoxin, then newly introduced as a therapeutic agent. Despite occasional references in internal documents to the 'Wellcome Physiological Research Laboratories,' this was not the official name of the unit until 1899. At the same time, the name of the unit headed by Power was changed from the 'Wellcome Research Laboratories' to the 'Wellcome Chemical Research Laboratories.' Thus the physiological and chemical research units were clearly distinguished.[15]

Although a number of German pharmaceutical companies had established research laboratories and developed ties with academic scientists by the 1890s, this was not generally true of the British and American firms. Jonathan Liebenau, in a review of the British drug industry, noted that 'there was little commitment to pharmaceutical investigation or product development' in the British industry during that period. He also added, however, that this began to change with the founding of the research laboratories at Burroughs Wellcome.[16] Similarly in the United States, as Jonathan Liebenau has also shown, research laboratories were established in a few firms such as Parke Davis in the 1890s and in the first decade of the 20th century. These early laboratories in Britain and America were largely a response to the bacteriological and immunological work involved in the production of diphtheria antitoxin and other biological products. Although some chemical work was done in pharmaceutical company laboratories in this period, it was largely focused on analytical chemistry for drug standardisation purposes, or on the chemistry of plant constituents, as in the case of Power and the Wellcome Laboratories. It was not until the First World War cut

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off the supply of synthetic drugs such as the antisyphilitic Salvarsan from Germany that pharmaceutical firms in Britain and America began to more seriously undertake research to develop synthetic chemical agents.[17]

Scientists in industry

Scientists who accepted positions in the pharmaceutical industry in the late 19th and early 20th centuries, were not generally held in high regard by their colleagues, at least in the Anglo-American world. When physiologist/pharmacologist Henry Dale joined the staff of the Wellcome Physiological Research Laboratories in 1904, for example, he was warned by his colleagues about affiliating himself with a pharmaceutical manufacturing firm.[18] In the United States, the American Society for Pharmacology and Experimental Therapeutics wrote into its constitution on its founding in 1908 a provision banning pharmacologists working for the drug industry from membership in the society.[19] The disdainful attitude of many academic scientists towards their industrial colleagues is further reflected in Sinclair Lewis' novel *Arrowsmith,* published in 1925. At one point in the narrative, the idealistic immunologist Max Gottlieb is forced for financial reasons to work for a drug company. Lewis writes that when the news about Gottlieb reached scientific laboratories around the world,

> ... sorrowing men wailed, 'How could Max have gone over to that damn pill-peddler?'[20]

This view of pharmaceutical industry scientists as tainted by commercialism began to lessen in the years following World War I as many companies began to place emphasis on basic as well as applied research and as more and more first-rate scientists joined the laboratory staffs of the drug firms. It was not until 1941, however, that the American Society for Pharmacology and Experimental Therapeutics finally eliminated its membership ban on industrial pharmacologists.[21]

Henry Wellcome was thus in the vanguard of Anglo-American pharmaceutical manufacturers in luring scientists of the calibre of Dale and Power into his employ and in providing them with time and facilities to investigate basic research problems. This is not to say that the work of the Wellcome Research Laboratories was totally focused on 'pure' research with no connection to the firm's products. Tansey and Milligan have pointed out that in spite of Wellcome's proclamation of the independence of the research laboratories from the firm, these laboratories did serve Wellcome's commercial purposes and contributed significantly to the success of the business. Probably because of Wellcome's close friendship with Power, the ties between the Chemical Research Laboratories and the company were especially close.[22] On one occasion, Power wrote to Wellcome while the latter was travelling that he hoped the work then going on in the laboratory would not only bring credit to that institution, but might also result in something 'productive of some material return.'[23]

The time of Power and his coworkers was by no means devoted entirely to research. In a description of the laboratories written in 1900, for example, Power wrote that some of the problems which engaged the time and attention of the staff were of a technical application, 'having reference to the perfection of the chemical products of Burroughs Wellcome and Company.' These types of projects, Power acknowledged, did not always provide material suitable for publication.[24] In a letter written a few years later, Power described some of the research being carried out in the laboratories at the time, but then added:

> My own time is occupied to a greater or less extent with all of the preceding investigations, with administrative work connected with the laboratories, and with the numerous details which daily claim my attention.[25]

Yet there is no doubt that Power and his coworkers were also given substantial time to carry out independent researches which had no immediate application to the commercial products manufactured by the firm. Many of their investigations were published in such academic chemical journals as the *Journal of the Chemical Society.* By the time Power left the employ of Wellcome in 1914, a total of 168 papers had been published from the laboratories.[26] The bulk of these dealt with Power's specialty, plant chemistry. Probably the most important work involved the chemical analysis of chaulmoogra oil, then accepted as the best treatment for leprosy, a subject which I have discussed at greater length elsewhere.[27] Power himself believed that this work would 'doubtless be of considerable scientific interest.'[28] The effectiveness of chaulmoogra oil in treating leprosy, however, came into question, and it was eventually replaced by the clearly effective sulfones.[29]

Like Henry Dale, his colleague for a number of years in the Wellcome Physiological Laboratories, Power was widely respected in the scientific community.[30] The presence of scientists of this calibre no doubt enhanced the scientific prestige of the Wellcome Research Laboratories.

Power's swan song as an employee of Wellcome was an exhibit on the Wellcome Chemical Research Laboratories at the Anglo-American Exposition in London in 1914. In the booklet accompanying the exhibit, Power summarised the achievements of the Laboratories.

> The investigations conducted in these laboratories ... have been of a most varied character and wide range, representing many branches of chemical science. They have comprised, amongst other subjects, the complete chemical examination of a large number of plants or plant products, which, on account of their reputed medicinal value or other properties, have been of special interest. ... This material has yielded a great variety of chemical compounds of considerable interest, while from such products as the essential and fatty oils new substances

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have likewise been isolated ... considerable time has been devoted to a study of their constitution. In the domain of synthetic chemistry a number of new organic compounds have been produced, and, amongst the inorganic salts, several have been brought into new forms of combination, whereby through greater uniformity of composition, permanency, or solubility, they have been rendered more suitable for medicinal use.[31]

Power added that while the Laboratories had not been in existence long enough to afford materials for a historical retrospect, he believed that the success of the Laboratories to date 'justified the expectations of their founder and of those who are in sympathy with the work which they aim to accomplish.'[32] With respect to the scientific contributions of Power and his colleagues, however, it must be acknowledged that while their experimental work was solid and added to the knowledge of plant drugs, it did not have a major impact on therapeutics. No 'blockbuster' drugs or strikingly innovative therapeutic approaches emerged from Power's laboratory. Fifty years ago, an article on the history and current aspects of research at the Wellcome Laboratories published on the centenary of Henry Wellcome's birth, made no mention of Power or his work.[33]

Return to USA

In that same year as the Exposition, motivated by a desire to spend more time with his children and grandchildren, as well as a concern that the war which had broken out in Europe would be a prolonged one that would interfere with research work, Power decided to return to the United States to live. In a letter dated September 13, 1914, Power wrote to his daughter:

> This letter, I am sure, will be of some exceptional interest to you, for the momentous decision has been made respecting my return to America. I have resigned my position, to take effect December 1st, 1914, and shall plan to sail as soon thereafter as possible ... Two weeks ago today I spent with Uncle Henry [i.e., Henry Wellcome] taking lunch and afternoon tea with him. He keenly regretted my decision, but nevertheless conceded that I was acting wisely, and our friendship will, of course, remain unimpaired. Since the receipt of my resignation, the good man has been considering in what way he could be helpful to me after my return to America.[34]

So Power left London and the Wellcome Laboratories to return to his native land. He was not quite ready to retire, however, and in 1916 at the age of 62 he accepted the position of chemist in charge of the Phytochemical Laboratory of the United States Department of Agriculture's Bureau of Chemistry in Washington, D.C. Power remained in this position until his death on March 27, 1927 at the age of 75, having twice been granted exemptions from the policy of the federal government at the time that required employees to retire at age 70.[35]

Although Power was buried in his home town of Hudson, New York, a funeral service was also held for him in Washington on March 29. Henry Wellcome made the trip across the Atlantic to pay tribute to his old friend. Power's daughter, who could not attend the Washington service, recounted an incident that was related to her about her beloved 'Uncle Henry' which she found very touching. She wrote:

> I was told that after the service, when all others had gone, Mr Wellcome, the dear and tried friend of more than half a century, remained for awhile alone at my beloved father's bier.[36]

Thus ended the friendship of more than half a century between the academic chemist and the entrepreneur-philanthropist.

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Louis Lotz (1843-1923) and the 'Deutsche Apotheke' in Milwaukee

Dr Holger Goetzendorff

Pulheim, Germany

Louis Lotz (1843-1923) worked as a German pharmacist in Milwaukee, Wisconsin, USA for nearly 50 years. He was not only famous for his apothecary shop but also for his travels in the southern United States. His diary of travel among the Indians in Colorado and New Mexico about 1900 gave a survey of their life.

German emigration

In the 19th century, about 6.5 million people left Germany behind in their search for better living conditions. In those days entire product lines focused on the problems that emigrants would face. Books such as *Tools for emigrants* were published. From 1849 to 1857 there was even an atlas of North America especially for emigrants, which was published by the Bibliographisches Institut, Hildburghausen. Looking back on the history of Wisconsin, most of the state's population had German roots. In 1890 half the inhabitants of Wisconsin were born in Germany.

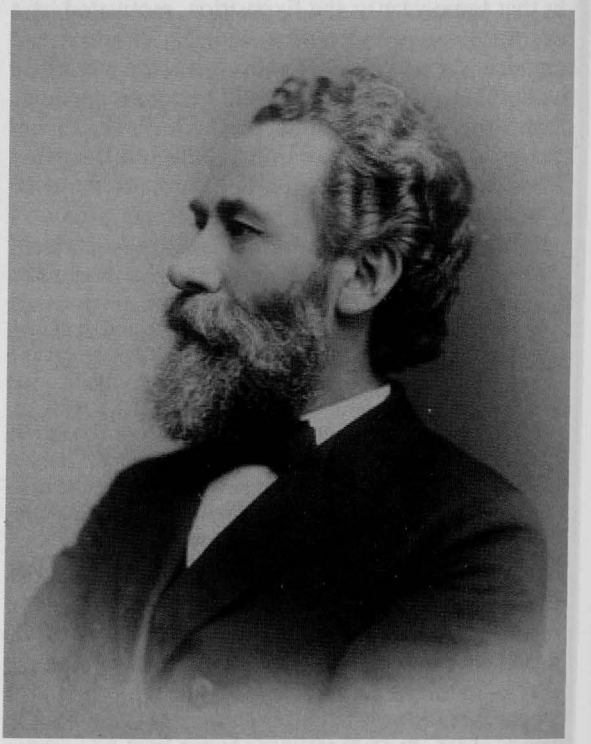

Figure 1. Louis Lotz about 1895

Approved by his parents[1], Ludwig Lotz emigrated to the United States in 1866. Ludwig already had some idea of what the United States would be like after working for Heinrich Toel in the Hirsch-Pharmacy,[2] which provided many ships with drugs for the big trip across the ocean. But the stories about Boston

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from his fellow students clinched it. So the 23-year-old Ludwig Lotz took the adventure through Southampton to his final destination Boston.

Education and travel

Before taking a closer look at the life of Ludwig Lotz in the United States, we will consider his roots. He was born on 28th November 1843 in Obermoschel, Rheinland-Pfalz as the youngest of four children. His father Friedrich Lotz, as well as his grandfather, were pharmacists. In 1847 his family moved from Obermoschel to Kaiserslautern, where Ludwig attended the Latin High School[3]. Later on, another German pharmacist from Kaiserslautern, Otto Raubenheimer, migrated to the United States and became famous with his pharmacy near New York[4].

Lotz wanted to become a pharmacist and took the traditional approach. At first he assisted Dr August Halberstadt,[5] a friend of his family, in the Amts-Apotheke in Camberg. Then, after his apprenticeship from 1859-1862, he worked as an assistant to L. Becker in Wolfstein, A. Ricker in Kaiserslautern, Ph. Streccius in Annweiler, F. Franck in Freiburg and finally to H. Toel in Bremen from October 1864 until September 1865.

Siebold in zoology and by von Kobell in mineralogy.[6] He passed his state examinations with distinction. At this time pharmacy was a study of only two semesters and did not require the highest possible German High School diploma. The syllabus during that time was in no way compatible with today's. Lotz had already gained experience from his botanical and mineralogical excursions during the years with Dr Halberstadt and was able to utilise these tremendous experiences later.

His mother's family (née Fliesen) can be traced all the way back to 1580, because a rich member of the family, Karl Ludwig Wilhelm Fliesen, had somebody write a family history in 1926. At first the Fliesens settled in the Netherlands, but the name was first mentioned in Cologne around 1200. In the family history, many members of the family were pharmacists as well. The ancestral seat of the Fliesen family is close to the author's home town, Pulheim.

Before sailing on the Cunard line 'Afrika' from Liverpool via Halifax, Canada he visited Paris and London, and reached Boston after 21 days. His travel diary from those days still exists, including impressive drawings of St. Paul`s Cathedral in London.[7]

Figure 2. St. Paul's Cathedral, London 1866

In those days Ludwig Lotz had already travelled to the islands of Norderney and Helgoland, which was governed by the English Crown at that time.

Studies at the University of Munich

After the years of travel he studied at the Maximilian-University of Munich from 1865 to 1866, where he was taught by Justus von Liebig in inorganic and organic chemistry, by Buchner in pharmacognosy and pharmaceutical chemistry, by Jolly in physics, by Radlkofer in general botany and plant anatomy, by

Working in the USA

After he arrived in Boston in the fall of 1866, he took a position as a prescription clerk with Claassen and Gilmore. His solid pharmaceutical education was rare and it was easy for him to find a well paid job. After six months, he travelled through New York and Buffalo to Columbus, Ohio, where he accepted a similar job with Brown, Brook & Co. A year later, he worked for the Meyer Brothers in Fort Wayne, Indiana.[8]

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Although Louis Lotz, as he now called himself, planned to stay in the United States no more than three years, he started his own business, approved by his family, in the spring of 1869 in Milwaukee.[9] He and von Trott bought the Enno Meyer's pharmacy.[10] During the next three years he worked in the wholesale part of the pharmacy as pharmacist and salesman.

On May 28th 1872 he married Freya Dorrestan. His father-in-law, the senior executive at the pharmaceutical company Enno Dorrestan & Son in Milwaukee, had lived in Braunschweig under his original name Meyer. They were a family of five with three children, Letta, Oscar and Irma.[11] After their marriage, Louis Lotz and his wife went on a one-year honeymoon.[12] The war between Germany and France had ended just prior to their arrival. Metz and Strasbourg still showed the signs of a heavily fought battle. From France, he travelled through Kaiserslautern all the way to Switzerland and Italy. As an American citizen he was able to move freely even in enemy territory.

The German pharmacy

Back in Milwaukee he again worked as a pharmacist. In the town's archives he was mentioned as a chemist, but that must been in regard to his time as the manager of a sugar plant. From 1875 until 1876 he worked for I.N. Morton, whose pharmacy was located on Wisconsin Street. In 1876/77 he was mentioned as the owner of a pharmacy at 306 and 308 Chestnut Street, where he stayed until 1892, and then he moved his pharmacy a few blocks down to 212 Chestnut Street.[13] Anybody looking for the name of the pharmacy was unable to find it, because only a small paper sign in the door, 'Louis Lotz, Apotheker', showed where the famous German pharmacy was located.

An article on Louis Lotz in the *Milwaukee Herold*[14] from November 20th 1923 said that he sold drugs only on prescription, prepared with German perfectionism. The same article described the pharmacy's outside. In front, two stone sculptures framed the entrance and above the central window a mortar and pestle were shown. One of the stone sculptures embodied Galen, the other Hippokrates. The floor plan[15] showed an office as well as a bedroom next to the long store space. In the basement was the storage space with a wooden floor and a lab which was half the size of the actual store space. A room for storage of oil existed, consisting of six kegs each holding 60 gallons of oil. The floor plan was drawn by Louis Lotz himself.

Figure 3: 'Deutsche Apotheke', Milwaukee

Taking a look at the store room, it is noticeable that the already common counter, chairs and soda-stream-machine were missing. Louis Lotz did not accept a soda machine in his pharmacy. Nor did he sell cigarettes or tobacco, candy, cameras, paper or newspapers. Smoking in his store was forbidden.

The common American opening hours, mixing soda until midnight, were significantly cut down by Louis Lotz to four opening hours a day. His pharmacy was open from 10.00 am to 12.00 pm and again from 4.00 pm to 6.00 pm. The pharmaceutical products that Lotz sold he produced himself with pestle and mortar. Every single product was documented and written down into his books. By 1923, a month before his 80th birthday, when Louis Lotz stopped working, and his death, he had documented more than 252,000 prescriptions.[16] Louis Lotz has always been an honorable man, especially regarding his German diligence and conscientiousness as a pharmacist. Despite that fact, many thought that his pharmacy was not up-to-date and not profitable. In 1901 Lotz wrote to Edward Kremers:[17]

> The high respect and success, which were achieved by Louis Lotz in the 32 years of him personally managing the pharmacy, are a persuasive prove that such a pharmacy, despite many objectives, was build on a scientific as well as an economical foundation, which is able to gain the faith of it's American customers.

Apprenticeship of Edward Kremers

Edward Kremers[18] (1865-1941), who later became a professor of pharmaceutical chemistry and dean at the school of pharmacy in Madison, Wisconsin began collecting bugs and other naturally produced goods during the 1880s. For the preparation of lizards and

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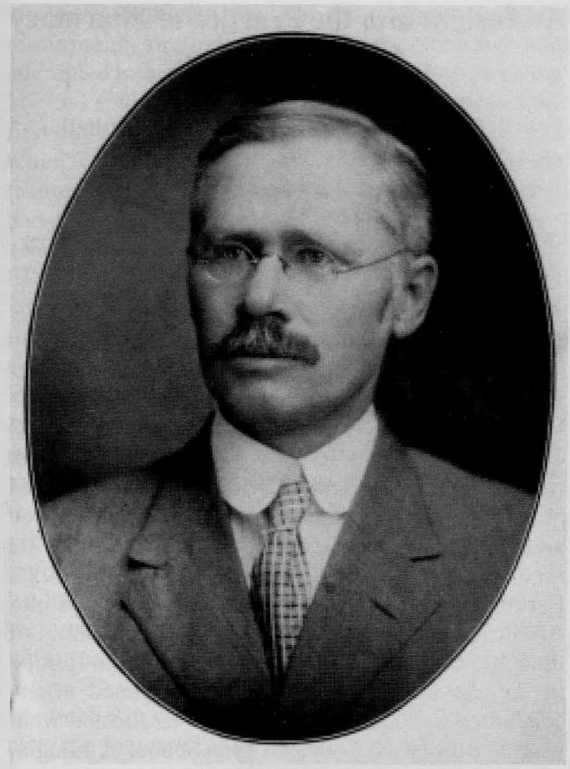

Figure 4: Edward Kremers, apprenticeship 1882–1884

snakes he needed the Wickersheim'sche Loesung [Wickersheim's solution], which was sold in Lotz's pharmacy. Kremers wrote:

> A few years later, as a real American, I dropped out of college thinking that I had to start my own business, but my dad managed to convince me of an apprenticeship as a pharmacist, due to my interests in natural science. So an apprenticeship with Louis Lotz seemed to be the best choice for me.

Kremers also wrote that 'Lotz and his experiences gave the technical-scientific apprenticeship a more humanistic touch.' He described the daily routine in the pharmacy, where Lotz focused on his hobbies:

> ... collections were arranged and every single item was eyed with love. He found out many usually more private things about his master. Lotz always decorated his shop windows with historical things and their descriptions, also often with items from his many travels through the Indian reservations.[19] The rich assemblages of Lotz's pharmacy have introduced me personally to things from all three kingdoms of nature.

As an example of the impressive books in Lotz's library, Kremers described the 14 volumes of the 'Oken'sche History of Nature and the big atlas. That it served as an inspiration to apprentices need scarcely be mentioned.'

The apprenticeship with Louis Lotz had deeply impressed Kremers and his interests in pharmaceutical and natural history. Kremers arranged meetings at his home by 1906 discussing pharmaceutical history. His interests in the history of pharmacy and science were the basic skills for his assemblage which can be found under the name Kremers-Reference-Files (KRF) in the American Institute of History of Pharmacy today. Much information on Louis Lotz only exists because of Kremer's questioning of his master.

Travelling in Colorado, Arizona and New Mexico

If one wants to give an overview of Louis Lotz's life, his ethnographical and archaeological research travels have to be mentioned. As a young man he had already travelled to Norderney, Helgoland, London and Paris and later on his honeymoon to France, the Swiss Alps and Italy, but his major objectives were the research travels to the south of the United States. Luckily Louis Lotz wrote a diary. The earliest and still existing diary was written during his time at the University of Munich.[20] The continuation describes his emigration in 1866. His diaries from 1899 of his travels to Niagara Falls, the South of the United States, Colorado and New Mexico still exist.[21]

Travel author

If Louis Lotz had not been a pharmacist, he would have been best characterised as a travel author.[22] He wrote many articles for the *Milwaukee Herold* or the *Milwaukee Sunday Post* and was a guest speaker at the 'Deutsche Gemeinde'. He not only described the landscapes he travelled through, but also the living habits of the Indians and he brought back many materials from his travels which were later displayed in his shop windows.[23] His exceptional drawing talent

Figure 5: Indians, San Juan, New Mexico 1899

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gave him the opportunity to record many things graphically and sometimes even his son Oscar helped him. Louis Lotz was a member of the Natural Science History Club, and the Wisconsin Archeological Society.

Edward Kremers wrote about Louis Lotz in 1936:[24]

> What he did was not only lege artis in terms of the pharmaceutical art, but also in terms of the educational art. Such a person will hardly ever exist again among the pharmacists of Wisconsin.

Louis Lotz has found the people and places he was looking for.

Acknowledgements

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An Insight into the Practice of Pharmacy in Ancient Egypt

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Classical History of Pharmacy

The origins of medicine and pharmacy are classically attributed to Hippocrates who died shortly after Alexander the Great invaded Egypt in 332 BCE. It is however Claudius Galenus, a Roman physician (94– 193 CE) and a subscriber to the writings of Hippocrates, who is classically credited with being the father of pharmacy. Born in Pergamon, he studied in Greece and Egypt, finally practising in Rome where he recorded his findings in purportedly 300 books. Fortunately many of his works were translated into Arabic and formed the basis of the Persian School of thought. When Avicenna brought that work to Europe in the eleventh century CE, he practised at the celebrated School at Salerno, when he formed what was to be the basis of our European School of thought. His works were translated into Latin which, along with Greek, remained the languages of scholars until the 20th century CE. In consequence, the prolific works attributed to Hippocrates, Galen and Avicenna have been studied for centuries.

Ancient Egyptian Medical Records

Equally meticulous and thorough in their recordings were the ancient Egyptians, but for a considerable time

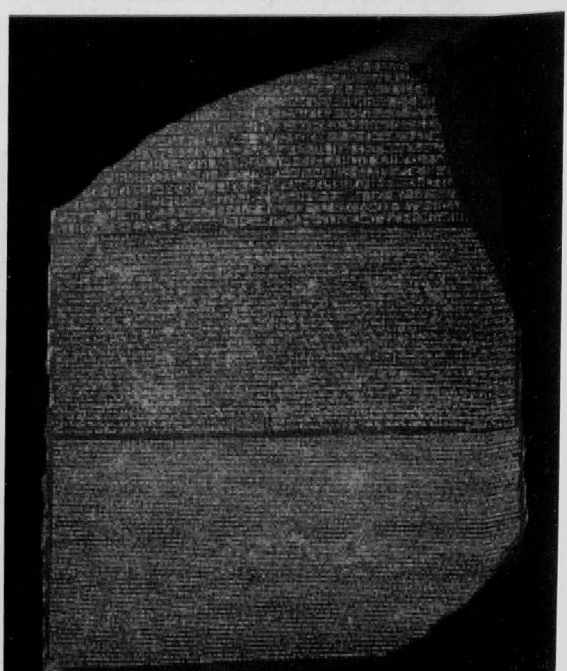

Figure 1. The Rosetta Stone. British Museum

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we were unable to read the inscriptions on their monuments or their written word. Scholars had attempted to decipher the hieroglyphs: Thomas Young (1773-1829) a Cambridge scholar had unlocked the first keys to this language, but it was not until 1822 when Champollion translated the Rosetta stone (Figure 1), were we able to read the hieroglyphs that had captivated and intrigued so many.

Found by Napoleon's troops at the small town of El- Rashid in the western delta of Egypt in 1799, this large grey granite stone contained a proclamation in three scripts: *Greek*, the language of the Ptolomeic rulers of Egypt from 332 BCE; *demotic*, the common language of the country; and *hieroglyphs*, the ancient language of the priesthood. Jean Françoise Champollion was able to lay the foundations on which our current knowledge of the language is based. It was those rudimentary steps only 180 years ago which accorded us the first insight into this astounding civilisation. Yet it was still a further 60 years before we had the first indication that the ancient Egyptians were practising a credible form of medicine at least 1500 years before Hippocrates and 1900 years before Galen. That evidence lies within the Ancient Egyptian Medical Papyri, of which there are twelve. Named after the person who found them or the institute which houses them, each is written in hieratic script, a cursive development of hieroglyphs, and details the ailments, diseases and treatments experienced by these ancient people. We have concentrated our research of pharmacy in ancient Egypt on just four of them:

1. The Kahun Medical Papyrus[1]

This Middle Kingdom text, 1820 BCE, from the reign of Amenemhet III, specialises in obstetrics and gynaecology (see Figure 2).

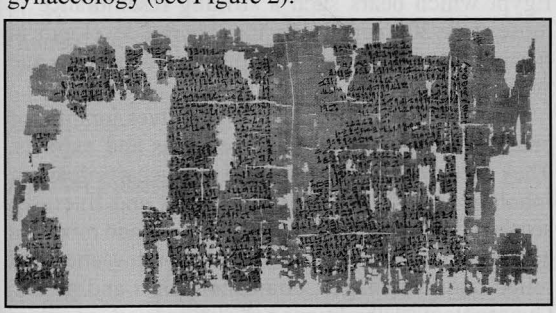

Figure 2. Page 2 of The Kahun Papyrus. Petrie Museum (cat. UC 32057)

The description of each case begins with a short indication of symptoms, a prognosis and treatment. The text is in three pages of which the first two pages detail 17 prescriptions for *'treatment of a woman suffering from ...'* A diagnosis *'say thou in regard to it'* and *'make thou for it'*. Symptoms relate to birth, menstruation, menopause, contraception, fertility and identifying the sex of an unborn child. Only 35 drugs are prescribed.

2. The Edwin Smith Surgical Papyrus[2]

The papyrus was purchased in Luxor in 1862 by an American, Edwin Smith. His daughter commissioned James H. Breasted, a pharmacist and Professor of Oriental Studies at the University of Chicago, to translate the text. Although the Papyrus was transcribed in the second intermediate period, (1786-1567 BCE), Breasted and others regard the copy to be from the Old Kingdom (2686-2181 BCE), whilst others attribute it to the early New Kingdom (1550-1070 BCE). It is the first record of bodily ailments and skeletal traumas documented in a disciplined authoritative professional manner, based upon observation, examination, diagnosis and treatment. Of the 48 surgical indications, case three is typical (Figure 3).

Figure 3

The Case Title *"instructions covering a gaping wound in the head penetrating to the bone"*

The Examination *" if thou examinest a man having a gaping wound in the head penetrating to the bone, thou shouldst lay thy hand upon it and thou shoudst palpate his wound; shouldst thou find him unable to look at his two shoulders and his breast and suffering with stiffness in his neck"*

The Diagnosis *" thou shouldst say concerning him, one having a gaping wound in the head penetrating to the bone and perforating his skull while he suffers stiffness in his neck:"*

The Verdict *" an ailment which I shall treat".*

The Treatment *"Now after thou hast stitched, thou shouldst lay fresh meat upon his wound the first day. Thou shouldst not bind it. Moor him at his mooring stakes (rest) until the period of injury passes by. Thou shouldst treat it afterwards with grease honey and lint every day until he recovers".*

Each case is repetitive, systematic and formulaic in its description, utilising only 10 different treatments.

3. The Papyrus Ebers[3]

Undoubtedly this is the most comprehensive record, comprising 877 prescriptions and remedies allotted to medical indications, utilising 250 substances. The papyrus purchased by George Ebers in 1873 is assigned to the reign of Amenhotep I, the second King of the New Kingdom (1551-1524 BCE), who initiated building work at the temple of Karnak at Thebes (Luxor). The contents are a formatted compilation of treatable symptoms and diseases. Each presumes that the diagnosis has been made, hence only a treatment is cited, a situation comparable with the *British National Formulary*. The prescriptions are listed in therapeutic order, dealing with ailments of the gastrointestinal tract, the urinary system, the eye, the skin, the extremities, various miscellaneous diseases, gynaecology, surgical cases and traumas. Preceding them all are the recitations to be made before medical treatment, to increase the value and efficacy of the remedy.

4. The Chester Beatty Medical Papyrus[4]

The papyrus, found at Deir el Medina in 1928 (British Museum Cat.10687 & 10686), was written circa 1200

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BCE in the 20th dynasty about the time of Ramses III. The 47 prescriptions for colorectal problems are similar in style to those of the Ebers papyrus, indeed many are duplicated from there, demonstrating the longevity of certain remedies.

Medicine in Ancient Egypt

Homer,[5] circa 900 BCE, in his Odyssey says *'in Egypt men are more skilled in medicine than any of the human kind.'* and *''yields herbs in greatest plenty, many healing'*. Some 400 years later, the Greek historian, Herodotus[6] (2, 84) referring to medicine in Egypt says *'each physician dealt with one malady not more. And the whole place is full of physicians. Some are established as healers of the eyes, others of the head, and others of the teeth'*. Evidence of some of those ancient physicians from 4500 years ago exists in tombs, statues, papyri , stella and ostraca.

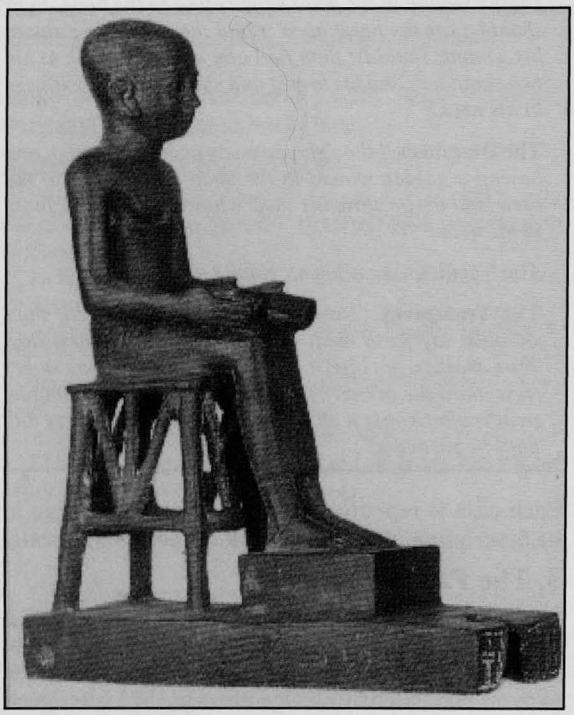

Figure 4. Imhotep 2400 BCE, Vizier to King Djoser, architect of the stepped pyramid at Saqqara and physician

Known as the *snwu*, they were regarded for their medical speciality, such as gynaecologists, dentists or those who specialised in the eyes or vessels of the body. There were proctologists too, their name translating to 'shepherds of the anus'. However, much of what we know of actual diseases in ancient Egypt is derived not from the medical papyri but from the forensic work of the Manchester Mummy Team[7] at the University of Manchester. Non-destructive techniques are employed to examine the finite source of mummified human remains. Radiology and computed tomography scans are used diagnostically to identify skeletal diseases: arthritis, osteoporosis, Pott's disease and spondylitis have been diagnosed. Endoscopy, histology and immunocytochemistry have shown parasitic worms including schistosomiaisis. Sand caused pneumoconiosis and smoky fires caused atherosclerosis. The sand mixed in their bread caused dental attrition, resulting in abscesses and peridontal disease, but only with the arrival of the sweet-toothed Romans does the increased incidence of tooth decay occur.[8] Tuberculosis, leprosy, smallpox, malaria and filarial disease were endemic. They also suffered from nutritional disorders: dependant upon the annual flooding of the Nile: their lives ranged from famine to plenty. It is manifest in their bones and we have evidence of famine, arteriosclerosis and diabetes. Forensic science has afforded us the opportunity to validate the diseases described in the medical papyri with our findings, but we wanted to know if they treated the symptoms. Was there any efficacy in their recorded remedies? Did the ancient Egyptians practice what we would describe as a credible form of pharmacy? Would their pharmacy stand comparison with the practice of pharmacy in the 20th century CE?

The Practice of Pharmacy in Ancient Egypt

Of 1000 prescriptions analysed within the papyri, some 284 drug sources and surgical appliances were identified. Of these, 70% remained in use until the middle of the last century and many prevail today albeit that most are now synthesised. These have been listed in an ancient Egyptian formulary and pharmacopoeia in the style of *Martindale* and the *BNF*.[9] This logical systematic format reflects the style adopted by the ancient Egyptian scribes. However, it is the method and preparation of formulations in ancient Egypt which bears such a striking resemblance to those of the 20th century, for the only real development lies in parenteral administration of medicaments and sterility.

The ancient Egyptians, like ourselves, employed creams, draughts, electuaries, enemas and extracts. They used eye lotions, drops and ointments, infusions, inhalations and insufflations. Juices and linctuses soothed coughs whilst liniments, lotions and mixtures acted as rubefacients. They used mouthwashes and relied upon mucilages, ointments paints and pastes. Gynaecological conditions were treated with pessaries whilst other ailments were treated with pills, poultices and powders. They excelled at solutions and suppositories. Their formulations, like ours, were characterised by the active ingredient, a vehicle in which it is conveyed, and generally some flavouring to make it palatable or an agent to make it soothing, and possibly a secondary drug to alleviate effects of the principal drug. Most of their remedies were simple, only 30% of formulations relying on polypharmacy. They employed techniques of concentration, dilution and solvent extraction, and were aware of dosing. The ancient Egyptians used only 41 different methods of preparation; each was specific and 90% reproducible.

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Table 1. Drug substances

Plant Substances (common names indicated within the medical papyri)

Absinthe ?	Fig	Pomegranate
Acacia	Flax	Pond weed
Aloe	Frankincense	Potamogeten
Ammi?	Gallnut	Raisin
Aniseed	Grapes	Ricin
Asafoetida	Gum Ammoniac	Rush nut
Balanites	Hemp	Rushes
Balm	Hyoscyamus	Saffron
Barley	Incense	Sagapen
Bayberry	Juniperus	Sasha Fruit
Beans	Ladanum	Sebesten
Benzoin	Lettuce	Seed Wool
Bryony	Lint	Senna?
Cannabis ?	Lotus	Seyal
Carob bean	Manna	Silphium
Celery	Moringer	Sory
Cinnamon	Mustard	Styrax
Colocynth	Myrrh	Sycamore
Coriander	Myrtle	Tamarix
Cress	Oil	Thyme
Cucumber	Onion	Turpentine
Cumin	Papyrus	Wheat
Cyperus	Pignons	Willow
Dates	Pine tar	Yeast
Dill	Pistacia	Zizyphus

Inorganic substances

Alabaster	Lead
Alum	Limestone
Antimony	Lye of washerman
Calamine	Magnetite
Clay	Malachite
Copper	Natron
Dirt	Northern salt
Faience	Ochre (red)
Flint	Ochre (yellow)
Granite	Orpiment
Gypsum	Pumice
Ink powder	Stibium
Lapis lazuli	Zinc

Animal Substances

Ass	Frog	Lizard
Bat	Fish	Mouse
Birds	Gazelle	Ox
Goose	Goat	Pig
Ibex	Hedgehog	Sheep
Ostrich	*Human*	Snake
Pelican	milk	Tortoise
Raven	urine	
Egg	*Insects*	*Vehicles*
Cat	Bee	Beer
Crocodile	Fly	Milk
Dog	Honey	Water
Dragon	Wax	Wine

Moreover, they instructed that each remedy be dispensed and taken in an individual, repetitive and reproducible format. Administration of the preparation was oral, topical, rectal, by inhalation or by fumigation. Drugs were administered via the vagina, the eye, the nose or the ear. Furthermore, they had a specified dose frequency and regimen, drugs being typically taken for four or eight days, not dissimilar to the antibiotic courses we have now. The rules were strict: if the patient hadn't recovered at the end of the course of treatment, only then was the physician allowed to depart from the book of instruction. He did so beforehand at his own peril.

Pharmacognosy in Ancient Egypt

Their inorganic, animal, and plant sources would be recognised today. Most were food sources, no doubt used to sustain the body in health and used in potent amounts to influence the body in sickness. (Table 1).

These people were specific in the source of the drug, the part to be used, when it should be harvested, its preparation, extraction and administration. They are the first in 1500 BCE to cite the many uses of castor oil – almost a mini pharmacopoeia:

> To know what is made with the ricinus plant according to that which is found in old writings as something useful to men: if its roots are crushed in water and applied to the head which is ill then it will get well immediately like one who is not ill. But if a little of its seed is chewed with beer by a man with looseness in his excrements then it expels the disease in the belly of the man. Further the hair of a woman is made to grow by means of its seed: it is ground, mixed together and put into oil by a woman, who shall rub her head therewith. Further its oil in its seed is used to anoint one who suffers from infection with bad putrid ——, then ——the skin as in one who has befallen. But he is treated by rubbing the aforesaid for 10 days very early in the morning until it is expelled. Really excellent, proved many times.[11]

Doses were specific and adjusted for adult, child or neonate. Prescriptions were enduring too, for we find remedies written in 1500 BCE repeated 300 years later. Indeed, elements are carried through to the time of Dioscorides in the first century CE.

System of measurement

Today, weights and measures are essential elements in the practice of commerce and so it was also in ancient Egypt. A section on weights is embodied in the 125th chapter of the Book of the Dead (1800 BCE)

> I have not lessened the corn measure
>
> I have not lessened the palm
>
> I have not deceived in the field
>
> I have not added to the weight of the balance
>
> I have not made poorer by means of the plummet of the balance.

None of the medical papyri studied utilise weights, but deploy a system of capacity based upon the *heqat*, estimated to be 4.8 litres. Every other unit was derived by successive halving of the previous quantity,

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although in practice, since the heqat was too large for domestic purposes, only two other units were used. The two units are the *henu* equalling $^{1}/_{10}{}^{th}$ *hequat* and the smallest and medicinally used unit, the *ro*, having a value of $^{1}/_{320}{}^{th}$ *heqat* and hence $^{1}/_{32}{}^{nd}$ *henu*. The *ro* is estimated to be equivalent to15 mL but the actual volume is thought by others to be nearer twice this amount.[10] The information the measurements afford are significant: They indicate value, potency and the vehicle in which the medication is carried. The pattern of measurement is reasonably constant so that when measurements are not detailed the pattern previously determined permits derivation of quantities from experience. Of the 1000 formulations examined, 23% detail weights, another 45% can be estimated safely because of precedent, leaving only 32% in doubt. Of these, they are generally used topically or diluted with a vehicle, to imply the measurement is not critical. The Edwin Smith surgical papyrus rarely details measurement when the drugs are fresh meat, honey and lint. One estimates from the detail elsewhere in the diagnosis and treatment that they would use sufficient to cover the wound.

Conversely when quantities are omitted from a suppository, practical application and experience determine the quantities if it is to be accommodated by the anal sphincter and rectum; similarly with enemas, there is a physical optimal limit for administration.

Drug therapy

Of their gastrointestinal drugs, laxatives dominated and they commonly used fresh carob, aloe, castor oil and colocynth, as well as the bulk laxatives bran and figs. Where we use magnesium carbonate as an antacid, they used calcium carbonate and they employed figs, barley, milk and honey as digestants in the manner we might have advised barley water. Even aggressive purgatives were mixed with anticholinergics of hyoscyamus and aniseed. They used powdered carob as an effective antidiarrhoeal remedy as we do to this day. Anal discomfort is referred to frequently and haemorrhoids are described. Treatment was with demulcent preparations in ointments or suppositories and prolapsed haemorrhoids were treated with a rehydrating plant source, the balance of evidence being in favour of carob.

Diagnostically, they had difficulty differentiating between the heart and the stomach, but to this day indigestion is still referred to as heartburn. Many of their cardiac prescriptions are laxatives but they also prescribed aloe, mustard and willow, all with active glycosides, and the alkaloids in hyoscyamus pomegranate and ammi are effective vasodilators. As a diuretic, *'To rid the body of water'* they made a concoction of honey, beer and carob or powdered dates and copious water until it induced vomiting. They had very effective antipyretics of salt, alum and willow, but we have no evidence that they used narcotics until the Roman period or indeed other sedatives. That said, we know they used hemp in their everyday lives, and around 1200 BCE, it was used as a suppository for the pain of haemorrhoids. Although they used willow there is no evidence that they were aware of the analgesic properties of its bark, containing salicin the natural precursor to aspirin. In consequence, their analgesics were restricted to the local anaesthetic effect of celery seed; carminatives of coriander and cumin and the antispasmodics of hyoscyamus and aniseed.

Musculoskeletal disorders were treated with warm bandages and poultices, or rubefacients of turpentine, mustard, juniper and frankincense. Celery seed used by them for painful joints is only *now* recognised for its antirheumatic properties and subject to current research. Drugs in obstetrics and gynaecology were limited, possibly because they regarded birth as such a natural phenomenon that it did not require the intervention of medicine. There is some evidence that they used absinthe for menstrual regulation but there is little to support this claim. Crocodile dung was used as a contraceptive; moulded into a pessary it served as a physical barrier and many might argue a psychological barrier too, but it has also been shown to contain an active spermicide. To accelerate the onset of labour they inserted a pessary of juniper oil, clinically recognised to cause uterine contraction and to this day contraindicated for pregnant women.

They could not have known that schistosomiaisis caused the urinary bleeding described by them, but its symptoms were treated with demulcent preparations based on barley water and acacia, and fortuitously they also prescribed antimony, an active biocide to the parasite. Balanites oil is also effective against the parasite and whilst they used the oil for many other medicinal uses, we have no evidence they associated the two. Impotence is cited and they advise a remedy containing 39 ingredients, none with any efficacy.

They expertly describe the parasitic worms which plagued them and with equal expertise prescribed anthelminthic remedies based upon pomegranate, absinthe, thyme, antimony and turpentine. Their antiseptics and germicides also had some efficacy. Where we employ phenols, alcohols and acids, their phenols were thymol and bitumen, their alcohols beer and fermented wine, and their acids soured wine. They used the heavy metals of zinc, antimony and copper as astringents mixed in any vehicle that would afford it even distribution. Doubtlessly unaware of the severity of some of their respiratory diseases, coughs were treated with sedative mixtures based on honey or acacia or stimulants of antimony. Their source of acacia was the same as ours and there can be little doubt that they tapped the gummy exudates from the tree much as we do now. Even Dioscorides in 200 CE describes it as a plant of Egypt. For congestion they used a nasal wash of salt or inhaled the vapour of turpentine. There is some evidence that they used

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ammi to treat asthma, its active ingredient, khellin, still being a chosen relaxant today in some countries. They treated eye infections with antiseptics of copper, honey, and child's urine and employed demulcents of acacia and milk. Antimony was deployed much as we used mercury. Alarmingly they also employed granite and dung from varying sources other than human.

Oral remedies included mouth washes of acacia, carob and milk, mixed with yellow ochre, cumin and copper, each effective antiseptics. Mouth ulcers were eased by chewing celery seed which has anaesthetic properties. Nasal congestion was treated by a nose plug of fragrant gum, reminiscent of olbas oil and for ear infections, the effective astringent malachite, honey and oil were put on lint and inserted in the auricular canal. Warmed balanites oil was dropped in the ear to improve the hearing and to this day olive oil ear drops are used.

Skin treatments had merit: acacia gum and plant mucilage were used as skin demulcents; balanites oil, castor oil and goose fat used as emollients and if they needed to control infection they mixed them with salt, frankincense, malachite and ochre or lead and then bandaged them. They described dandruff and used ladanum to clear it but baldness was treated probably ineffectually and symbolically with fats, oils and hedgehog quills. Burns were treated with turpentine, copper, oils and honey. It is still used by some African cultures today. It is extremely painful and scarring but controls infection.

Dressings

Their bandages and lint were found to only marginally fail today's BP standard. They used fine linen twine for sutures, and splints of wood and bandages secured broken limbs. See Figure 5.

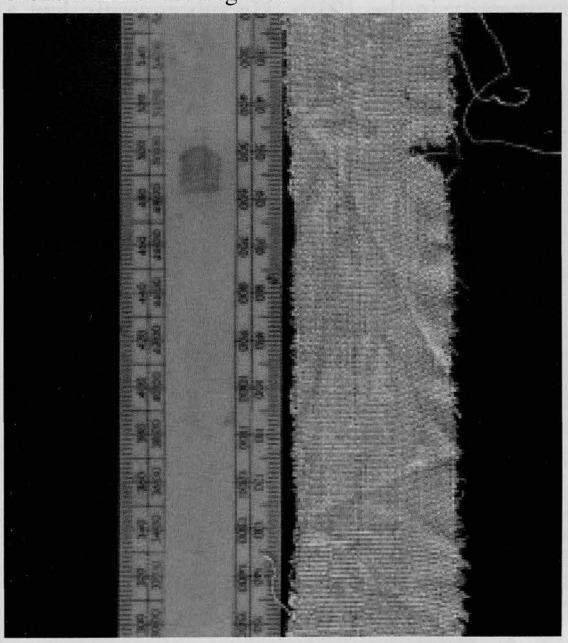

Figure 5. Linen bandage from Mummy 1760, Manchester museum

Conclusions

If pharmacy is the compounding of medicines from the collection of drugs, their preparation and dispensing through to the control of efficacy, uniformity and toxicity, then pharmacy as a science existed in ancient Egypt.

It is the consistency of the use of drugs which is remarkable. All preparations are characterised by a principal ingredient, usually the most active, supported by other supplementary ingredients to lessen certain side-effects; flavourings to disguise bitterness or unpleasantness and finally a medium or vehicle in which to deliver the drug. These characteristics were as relevant 3500 years ago as they are today. What is remarkable (arguably obvious) is that the same principal drugs are used today, as are the same vehicles, albeit in a modified form. Perhaps most striking of all, is the pattern of drug use in ancient Egypt. To have formulated prescriptions demonstrates a skill in gathering the raw material and knowledge of botany and awareness of empirical formulation. The mixtures and instructions for use imply that these formulations were tested and some bear testimonies "*this is really excellent*". It is therefore reasonable to assume that the formulations themselves are older than the papyrus which records them, a view held by most scholars.

Within the Ebers papyrus there are clear patterns of use within one indication. A certain block of formulations will show a preference for colocynth as a laxative, others for figs, whilst yet others cite sycamore fruit. Within the remedies for the eye, groups of formulations use malachite, others copper. With burns also, some use copper hammerings, others malachite. It is indicative of that which we find in the *British Pharmaceutical Codex* today. Certain drugs are fashionable at certain times, retaining their use until something better or more fashionable replaces them. Traditionalists stay with the old; adventurers utilise the new, but the formulary carries all. Such is the case with the Ebers papyrus. What the papyrus is not is a pharmacopoeia in the style of Martindale's *Extra Pharmacopoeia*, or the *British Pharmaceutical Codex*. That said, there is one such monograph within the Ebers papyrus detailing the many uses of ricinus (castor oil). It would be fanciful to suggest that it was indicative of such a pharmacopoeia, but it nevertheless demonstrates that the ancient Egyptians were knowledgeable about plants and that they collated their experiences of these and other substances.

Until there is evidence to the contrary, the credit for the science of pharmacognosy and the first pharmacopoeia, must rest with Dioscorides. In the first century CE, he recorded his findings, detailing plant monographs which were the product of his scientific study. Pliny, his contemporary, also provides a wealth of botanical information, but more as an observer of the facts of life than as a student of medicinal botany. The question arises: from where did Dioscorides gain his information? In the first century CE, the cultural

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world was Roman, yet still greatly influenced by Greek culture and education. Alexandria was still regarded as the seat of learning as it had been for 300 years: a period akin to that of Oxford and Cambridge today. It was a place of study for the scholars of Greece and Egypt and it is inconceivable that the two scientific cultures did not assimilate. As with all centres of learning, Alexandria would have been a reservoir of collated knowledge, benefiting from the many cultures and civilisations gravitating there, but most of all, influenced by Egypt, its geographical, cultural and intellectual foundation. Indubitably, the Greeks who so avidly imbibed its teachings would have contributed as significantly as, in their turn, would the Romans.

The one thousand prescriptions analysed in the Ancient Egyptian Formulary furnish compelling evidence that pharmacy, as a practice, existed in ancient Egypt. The formulation of products demonstrates control, consistency and reproducibility of preparation. Prescribing heeded age, sex and route of administration and the evidence strongly suggests that in ancient Egypt medicines were compounded and drugs were collected, prepared and dispensed. The detail within each prescription demonstrates a high degree of control.

Did pharmacists exist in ancient Egypt?

While pharmacists most probably did not exist as a separate profession in ancient Egypt, the art of pharmacy most certainly did. The Ebers papyrus details an ointment to be made by Chui the venerable, a high priest of Heliopolis. He did not enjoy the title of pharmacist but he certainly practised the art in 2500 BCE. Twelve hundred years later in the time of Ramesis II, an ostracon in the British Museum records absentees from work, one worker being the preparer of medicines.[12]

It is therefore our premise that the foundations established in Egypt as early as the Old Kingdom were adopted by the developing Greek culture, particularly so from 700 BCE onwards. Their subsequent political stability, military domination and communication skills conferred historical continuity. Thus it was the Greeks who were credited with being the fathers of medicine and pharmacy. In reality the origin and credit most probably lie with the ancient Egyptians before them.

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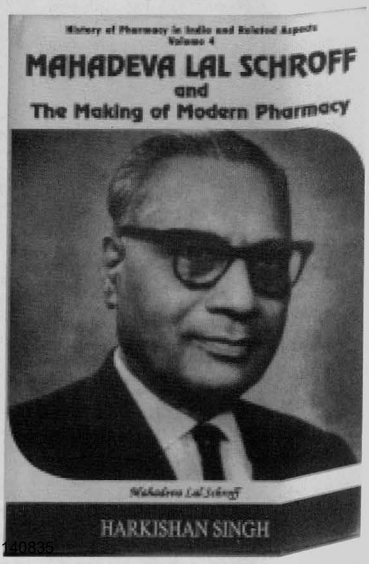
Review

Mahadeva Lal Schroff and the making of modern pharmacy. (History of Pharmacy in India and Related Aspects, vol. 4).
Prof. Harkishan Singh. ISBN 81-85731-39-X. Obtainable from: Vallabh Prakashan, AP-53A Pitampura, Delhi 110088, India or vallabh@vsnl.com; Pages 216 + xvi, Price Rs 500, US$45 (postage $10).

This further monograph by Prof. Singh is a biography of the eminent Indian Mahadeva Lal Schroff who, in spite of becoming an orphan at an early age, trained as a chemical engineer and built up the first department of pharmaceutics at the Banaras Hindu university in the 1930s. He subsequently had a considerable influence on the development of pharmaceutical education and is seen as the maker of modern pharmacy in India.



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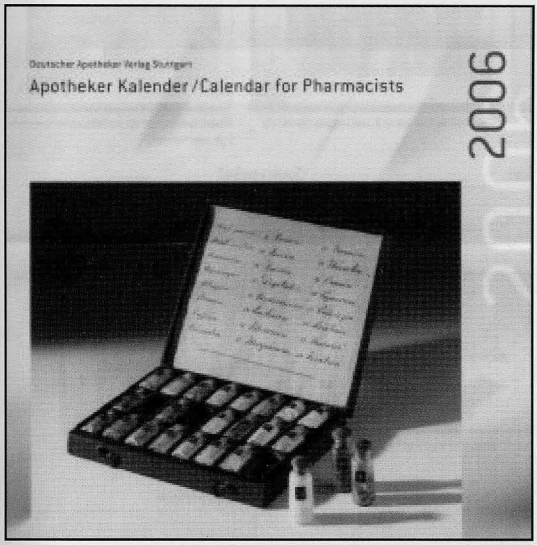
Review

Apotheker-Kalender 2006 (Calendar for Pharmacists 2006)

Prof. Dr Werner Dressendörfer. ISBN: 3-7692-3842-7. Obtainable from Deutscher Apotheker Verlag, Postfach 101061, 70009 Stuttgart, Germany or service@deutscher-apotheker-verlag.de; price 68 Euros



This series of Calendars for Pharmacists was founded by Fritz Ferchl, then produced by Prof. Wolfgang-Hagen Hein until 2003, who was succeeded by Prof. Werner Dressendörfer. The colour pages of the Calendar are 49 x 49 cm and this year illustrate objects from the Merck Archives.

The cover and March calendar show a sample case of alkaloids from 1863. H.E. Merck prepared alkaloids that could not be readily made in the pharmacy and thereby started the unknowing move towards the current dominance of the pharmaceutical industry. A collection of substances used in research on liquid crystals by Merck a century ago is the subject for November.. It was the 1960s before they started to find an application in liquid crystal displays. May shows portraits of H.E. and Magdalene Merck from 1850, and December has an 18th-century figurine of St Roche, claimed to help with the plague.

Apothecary containers are represented byJanuary with three 18th-century enamelled glass jars and October with four wooden 18th-century jars for the dry storage of drugs containing ethereal oils or hygroscopic substances. For September there is an unusual 1929 photograph of sugar-loaf-like cones of morphine drying in an industrial process, while July has a painting by the industrial artist Otto Bollhagen of chemical production in the new Merck factory of Merck in Darmstadt around 1920. Two pieces of pharmacy equipment appear for August – an early 20th century wooden apparatus for counting out 50 tablets and a metal bougie mould.

A striking advertisement for Merck Aqua oxigenada from the 1920s is shown for February and three French 19th- century cosmetic containers for April. The German chemist F.F. Runge (1794-1867) was involved in dyestuffs research and developed an early chromatographic method that produced beautiful pictures; the April picture shows one from his book of 1857.

The descriptions of the objects in the colour plates are in German and English and provide a valuable context for the history in the pictures from the Merck collection..

A.W.

Postcards and greetings cards from the Museum

One of the range of 24 postcards and 4 greetings cards on sale on behalf of the Museum from the Library issue desk at 1 Lambeth High Street. All the cards show images or objects from the Museum's fine collections. Reproduced with permission.

Left: T Morson and Sons Summerfield Works, Ponders End, Enfield 1915; Shop no. 11 producing powerful acids.

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